Summer 1984

ORVs On the Cape Cod National Seashore

Karen G. Chaffee
University of Rhode Island

ORVs On the Cape Cod National Seashore

Karen G. Chaffee
Marine Affairs
Summer 1984

INTRODUCTION

Historically, the dunes and beaches of many of the barrier island seashores including the Cape Cod National Seashore have been mistreated. Early settlers cut down trees and trampled grassy vegetation leaving sand to move about with tides, winds, and storms. Thus erosion became a problem to the inhabitants rather than a part of the natural construction and retreat of the dunes.

Early management strategies tried to halt these natural processes as well. It became evident with the work of several researchers at the Cape Lookout National Seashore that a natural approach to preservation was needed. They realized that we should be preserving a natural succession and way of life, not trying to preserve the present state of things in a dynamic world. Unfortunately, Congress has not seen the need to clearly define this goal regarding off-road vehicles in the legislation establishing the National Seashore on Cape Cod.

With the creation of a National Seashore, we incur the responsibility of maintaining and preserving it. Since the establishment of the Cape Cod National Seashore in 1961, the use of off-road vehicles (ORV's) has increased dramatically. These vehicles damage the fragile ecosystems of the Seashore. The National Park Service Cooperative Research

Unit at the University of Massachusetts, Amherst was commissioned to undertake a five year study of the many facets of off-road vehicle impact on beach and dune as well as salt marsh and tidal flats.

Their overall conclusion was that there is no "carrying capacity" of seashore ecosystems for off-road vehicle use. Despite this conclusion, the final report of the five year study lead by Godfrey and Leatherman contains many specific recommendations for managing off-road vehicle use on the Cape Cod National Seashore.

After careful analysis of the report of research findings and the legal mandates regarding the responsibility of park management and preservation, the National Park Service set up a management strategy for off-road vehicles. With this, the Conservation Law Foundation of New England, Inc., and several other concerns brought a civil action against the Department of the Interior citing their management plan as irresponsible in view of the scientific findings of no "carrying capacity." This case has been pending in the court since 1981 and off-road vehicles use is still permitted.

Personally, I prefer to walk quietly on the beach, undisturbed by the noise, fumes, ruts, and very presence of off-road vehicles. I would have been pleased to see the Park Service ban them from the Seashore not only for the tranquility, but also for the sake of conservation. That is not to say that drivers of these vehicles do not have a

right to use the Seashore, only that I would prefer they leave their vehicles behind. It must be remembered, however, that the question before the judge cannot be, "Is the management plan right?" but must be, "Is it legally sufficient?" It is not the place of the courts to second guess the decision makers. According to the Administrative Procedures Act, it is the duty of a court reviewing a case such as this to be sure that the decisions are made in a legal manner, in accordance with appropriate legislation.

When the judge's decision is handed down, it will probably not settle the issue. No decision can satisfy both sides and no matter what the outcome, there is likely to be an appeal. It will however, set a precedent as to the definitions and requirements in protecting public lands.

BACKGROUND

Cape Cod and its seashore are part of the long line of more than 290 barrier islands which stretch along the Atlantic and Gulf coasts of the United States.[1] These ribbons of land protect the coast from the fury of the ocean and its ravaging storms. They serve as a buffer between the savage ocean and the developed mainland coast. These fragile yet dynamic barriers erode and build shifting in response to rising sea level, storms, and man's abuse. The widening and migration of barrier systems is a complex combination of erosion and deposition. These processes are complicated by man.

Historically, dunes and beaches have been mistreated. Man has cut down trees and trampled the grassy vegetation necessary for the natural succession process, leaving sand to move about with tides, winds, and storms. Due to this misuse and lack of management over the years, erosion on the Cape Cod National Seashore is a severe problem.

When people realized that their precious beachfront property was disappearing under their feet, leaving their buildings awash and seemingly smaller and smaller portions of land were left for their enjoyment, they tried to halt the natural movement of the shoreline. This type of management strategy failed miserably on the Cape Hatteras

National Seashore in time to be a warning for Cape Cod. Measures used by engineers to stop the encroaching sea were expensive and met with only temporary success at Cape Hatteras.[2]

It has been found that trying to halt the ocean and maintain a static environment on barrier systems may actually lead to more rapid erosion. Findings by Godfrey at Cape Lookout National Seashore seem to have been the turning point in the management of barrier systems. His research prompted work by Robert Dolan who concluded that the "natural approach" to stabilization might be the best alternative in barrier beach management.[3] After more research and observations, Leatherman noted that:

> "If one realizes that it is more important to allow the processes which created the environmental setting to function naturally then the resource will be maintained indefinitely without management costs."[4]

However, no management policy (natural or structural) should be applied without regard to environmental conditions, current state of human intervention, and intended uses. Man cannot hope to successfully halt the ocean's movement landward on the receding beaches ORV's or not. I have seen Coast Guard Beach parking lot at Eastham fall into the ocean peice by peice as a result of natural processes.

On accreting beaches, however, where man has caused

devegetion, permitting sand to move about, the natural approach to management does include dune stabilization. In the Provincelands area, the forest is threatened by moving sands and stabilization is simply a means to restore a condition in the natural succession which man has disrupted.[5]

So, Cape Cod has several types of management requirements. Some, allowing the ocean to take its toll and others to help nature take its course by restoring conditions which man put awry. Man cannot become too greedy for shoreline acreage in the path of the formidable sea and must nurture the precious shoreline which is available. It is crucial to distinguish among the management techniques necessary before embarking on a plan.

At the time that the Cape Cod National Seashore was established, the land developers posed a much more apparent and immediate problem than did the off-road vehicles as is the case on Block Island, Rhode Island today. The management concern at that time was that the Seashore retain its traditional capacity as a place where people could get away from the modern hustle and bustle of city life to a quiet, relaxing solitude.

Although I have seen Route 6 widened and modernized and the upstart of many commercial establishments along the Cape, the Seashore is still unblemished by the high-rise, condominiums, and time-sharing concerns which have all but obliterated the shoreline of Miami Beach, Atlantic City, and

Waikiki Beach. I can still roam for miles on the beach without concern for private property or the daily bothers of civilization. In this respect, the establishing legislation has been successful in protecting the Seashore. But over the last twenty years, what was not considered a problem at the inception has now become a major issue.

The history of off-road vehicles on the Seashore goes back to the 1930's when Model T Fords were driven over sand using balloon tires.[6] The popularity of driving on beaches and dunes increased with the arrival of jeeps which were less prone to becoming hopelessly stuck in the sand than earlier vehicles. Still, by the time 1961 rolled around and the Cape Cod National Seashore was established their popularity had not reached its prime.[7] At the time, off-road vehicles were not expected to pose any particular threat to the Seashore and no specific provisions were included in the establishing act to govern their use. But, when we established the Cape Cod National Seashore, or any National Park, we incurred the responsibility to protect it from its users. This is the task of the National Park Service as the adminstering agency within the Department of the Interior.

Although off-road vehicles are not mentioned specifically, the laws are written in such a manner that their interpretation can easily be applied to anything which seems to be in any way detrimental to the Seashore.

The National Environmental Policy Act of 1969 states as

part of its purpose that it wishes to:

> "...encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment..."[8]

It also states in Title 1 the desire,

> "...to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans,"[9]

and to,

> "...attain the widest range of beneficial uses of the environment without degradation..."[10]

The Seashore's establishing legislation itself states, "In order that the seashore shall be permanently preserved in its present state, no development or plan for the convenience of visitors shall be undertaken therein which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing..."[11]

Not only the law itself, but also the legislative history clearly indicates that although recreation in appropriately designated areas would be permitted, the major thrust was intended to be conservation and preservation.

By 1964, the use of off-road vehicles had reached a

remarkable level moving the National Park Service to institute a vehicle registration program, issuing permits for vehicles operated on the dunes and beaches north of Head of the Meadow Beach. In that first year, nine hundred sixty-six permits were issued.[12]

In 1971, an Off-Road Recreational Vehicle Task Force Study was done. The popularity of off-road vehicles had blossomed and there was concern over possible environmental damage and user conflicts. On February 8, 1972, in response to the need for a policy addressing the use of vehicles in national parklands, President Nixon issued Executive Order 11644 entitled, "Use of Off-Road Vehicles on the Public Lands." This left nothing to the agency's imagination in its interpretation of the rules for managing the increasing problem of off-road vehicles.

It's purpose is to,

> "...ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands."[13]

The order requires that regulations and administrative instructions be issued to designate areas and trails for off-road vehicle use and those areas where such use will be prohibited. It directs that the regulations must be in accordance with the purpose of the order. Several specific

considerations are also enumerated, including the location of trails so as to minimize the following: damage to soil, watershed, vegetation, and resources; harassment of wildlife; disruption of habitats; and user conflicts. Adequate opportunity must be afforded the public to participate in formulating regulations and designating areas and trails. The agency is also responsible to ensure the dissemination of information relating the areas where off-road vehicle use is permitted and marking such areas well. Penalties for violations and procedures for enforcement are also part of the duties of the agency. These tasks may be carried out in cooperation with state and local authorities but the agency remains accountable for their execution.[14]

In response to Executive Order 11644, the Superintendent of the Seashore requested funds to contract for a scientific study of off-road vehicle impact on the Seashore. In 1974, the funds became available and the National Park Service Cooperative Research Unit at the University of Massachusetts, Amherst was commissioned to undertake the study over a several year period. In 1979, the study was completed and the final report was issued entitled, The Impacts of Off-Road Vehicles on Coastal Ecosystems in the Cape Cod National Seashore: An Overview. The findings of this extensive study along with the resultant recommendations are addressed in the next section.

During the course of the study, the popularity of

off-road vehicles steadily rose until in 1978, 5,843 permits were issued. This six fold increase over the fourteen years since permits had first been issued brought to mind the gravity of the situation.

In May of 1977, Executive Order 11989 was issued by Jimmy Carter amending Executive Order 11644. This order adds a section which gives th agency responsibility for closing areas or trails to off-road vehicles if their use is determined to be causing "considerable adverse effects" to the public lands.[15] In view of this order and some of the early findings by Godfrey and Leatherman. Hatches Harbor was closed to off-road vehicles. Nauset Spit was also closed in the Spring of 1978.[16]

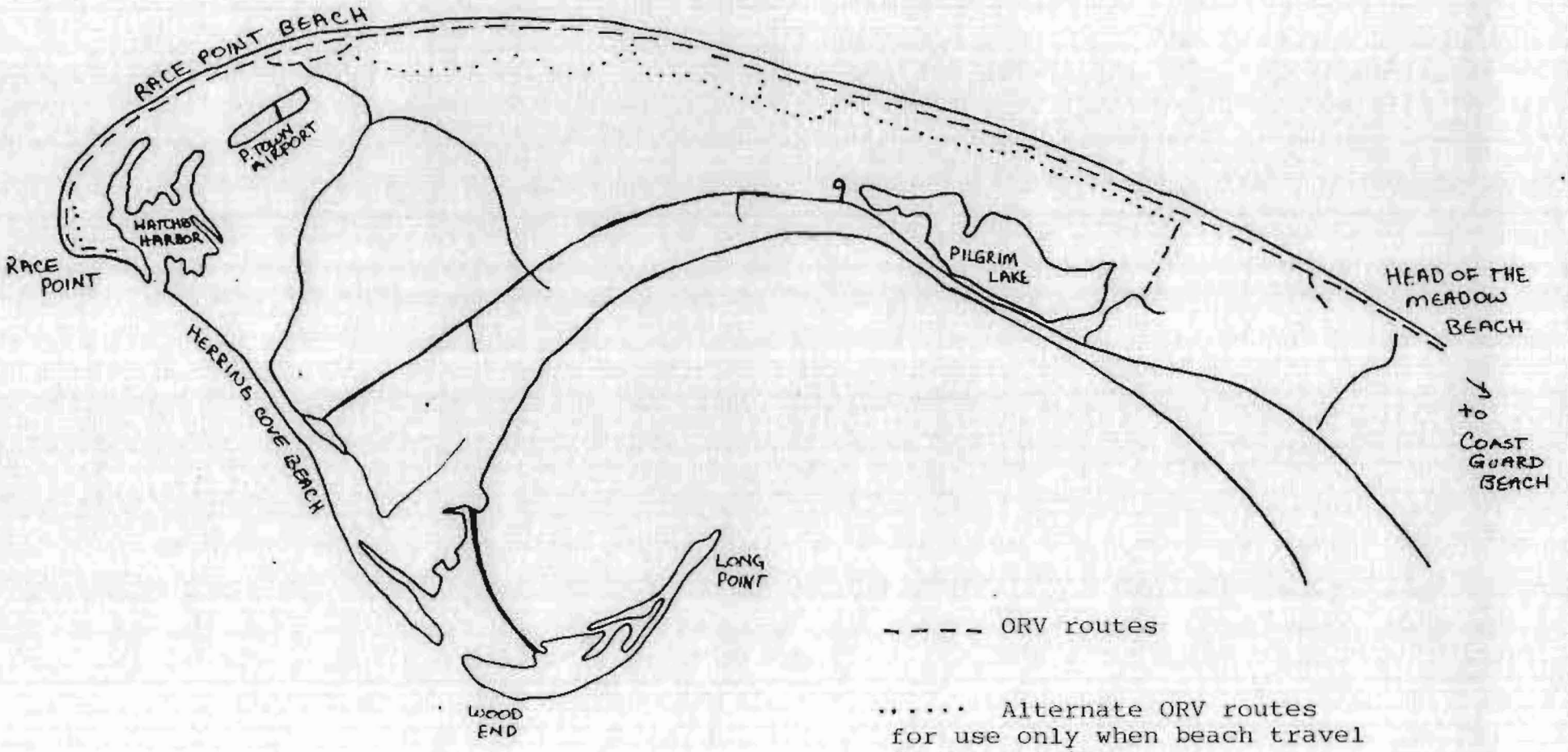
The "Analysis of Management Alternatives (Including Environmental Assessment) For Off-Road Vehicle Use Cape Cod National Seashore, Massachusetts" was compiled based on the scientific data made available primarily as a result of the Leatherman - Godfrey studies and with consideration given to the appropriate statutes. The goals which served as the focus in formulating the alternatives included a desire to: 1) preserve the unique ecosystems found within the Cape Cod National Seashore; 2) eliminate or at least minimize damaging environmental impacts resulting from ORV's; 3) reduce user conflicts and enhance enjoyment of those using the Seashore; 4) provide for management of visitor activities given the personnel and financial restraints; and 5) provide for access to dune cottages.[17]

The Analysis of Management Alternatives consisted of several plans ranging in action from no change in policy to completely banning off-road vehicle use on the Seashore. Each of these will be addressed later. Its availability was published along with notice of two public meetings in the October 31, 1980 Federal Register as required by law. One of the meetings was held in Boston on December 1, 1980 and the other the following day at the Salt Pond Visitor's Center, Cape Cod National Seashore, Eastham, Massachusetts. In addition to the speakers at these two meetings, some 500 other responses were seen during the period of review.[18]

Armed with the scientific data, public opinion, legal guidelines, and the recommendations of the Seashore Advisory Commission, the National Park Service formulated its Off-Road Vehicle Plan.[19] The Plan designates the routes shown in Figure 1 as appropriate for off-road vehicle use. Under the Plan, the Outer Beach is open to off-road vehicle traffic from Hatches Harbor to Coast Guard Beach. Travel on the Outer Beach is restricted to a corridor, shown in Figure 2, on the backshore between the berm and spring high tide drift line. Vehicles must remain on the beach below the cliffs and may not venture onto the dune toe. Travel between Head of the Meadow and Coast Guard beach may be further restricted by towns and private landowners.

Although most dune routes are closed under the Plan, a route is designated in the outer dune between Race Point Ranger Station and High Head, as well as, one at Race Point,

Fig. 1. ORV routes under the Off-Road Vehicle Management Plan.



From The Management Plan.

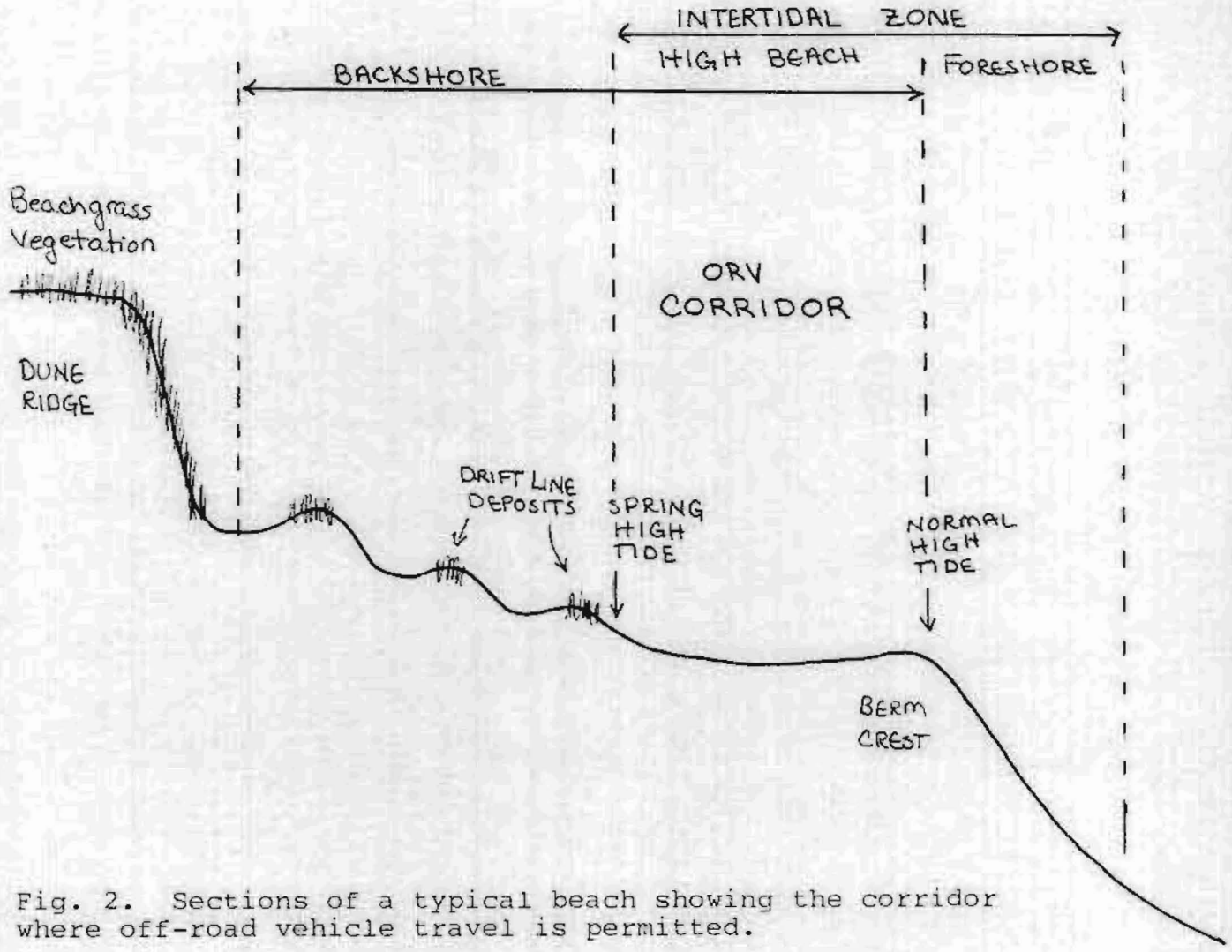


Fig. 2. Sections of a typical beach showing the corridor where off-road vehicle travel is permitted.

From Godfrey & Godfrey, "Ecological Effects of Off-Road Vehicles on Cape Cod," Oceanus, 23 No. 4, Winter 1980-81, p. 50.

for use only when travel along the beach is curtailed. The Outer Beach may be rendered impassible by especially high tides and may be closed to protect tern nesting colonies.

The Plan permits no off-road vehicle travel from the opening of Hatches Harbor to the end of Long Point and completely closes Hatches Harbor to vehicles. High dune routes will be closed except for those used as alternate routes already mentioned and as access to dune cottages.

The Plan does not limit the number of off-road vehicle permits issued per year nor does it create a daily maximum use criteria. It does, however, continue to limit the use of self-contained vehicles on the beach. Although the self contained vehicle site west of High Head is closed under the Plan, the two sites near the Race Point Ranger Station remain open. A maximum of one hundred vehicles total will be permitted to utilize the two sites at any time. Additional regulations already in affect and which will continue to govern the use of ORV's are found in Appendix 1.

In addition to the regulations set forth in the Management Plan, the towns of Truro, Wellfleet, and Eastham control the beaches and access points under their jurisdiction.

The new Management Plan was issued on March 30, 1981 and went into effect on April 15, 1981. On that day, the Conservation Law Foundation filed suit in the Federal District Court of Massachusetts seeking to prevent the National Park Service from executing the Plan. The

Conservation Law Foundation has charged that the Plan is insufficient to protect the resources of the Cape Cod National Seashore and that its formulation demostrates a serious abuse of discretion and an irresponsible decision on the part of the National Park Service.

The following sections describe some of the considerations involved in reviewing the case, as well as the legal concerns necessary in reaching a decision. Finally, it is enlightening to explore some of the ramifications that any decision will have.

SCIENTIFIC DATA

The Cape Cod National Seashore is made up of a number of different interrelated environments illustrated in Figure 3. The effects of vehicles on each of these is important in understanding their overall impact. The beach is a fragile yet dynamic entity shaped and moved, built and eroded by wind and waves. This is its life and its purpose. The beach is the first buffer to protect man and mainland coast from the savage, stormy ocean. In addition to protection, the beach provides an important habitat for a multitude of species and is the site of new dune formation. Figure 2, shown earlier, shows the sections of a typical beach.

We can begin to study the beach with the area closest to the water, what is known as the foreshore intertidal ocean beach. This foreshore area is very variable, repeatedly covered and exposed as a result of tidal changes. Because of this, it is almost impossible to obtain accurate and reliable data for analysis. It was found that this zone contains a huge sampling of representative invertabrates living between the sand particles. These include many bacteria, important for their nutrient recycling activities and algae which are primary producers in the aquatic food chain.

Organisms present in the foreshore area of the beach

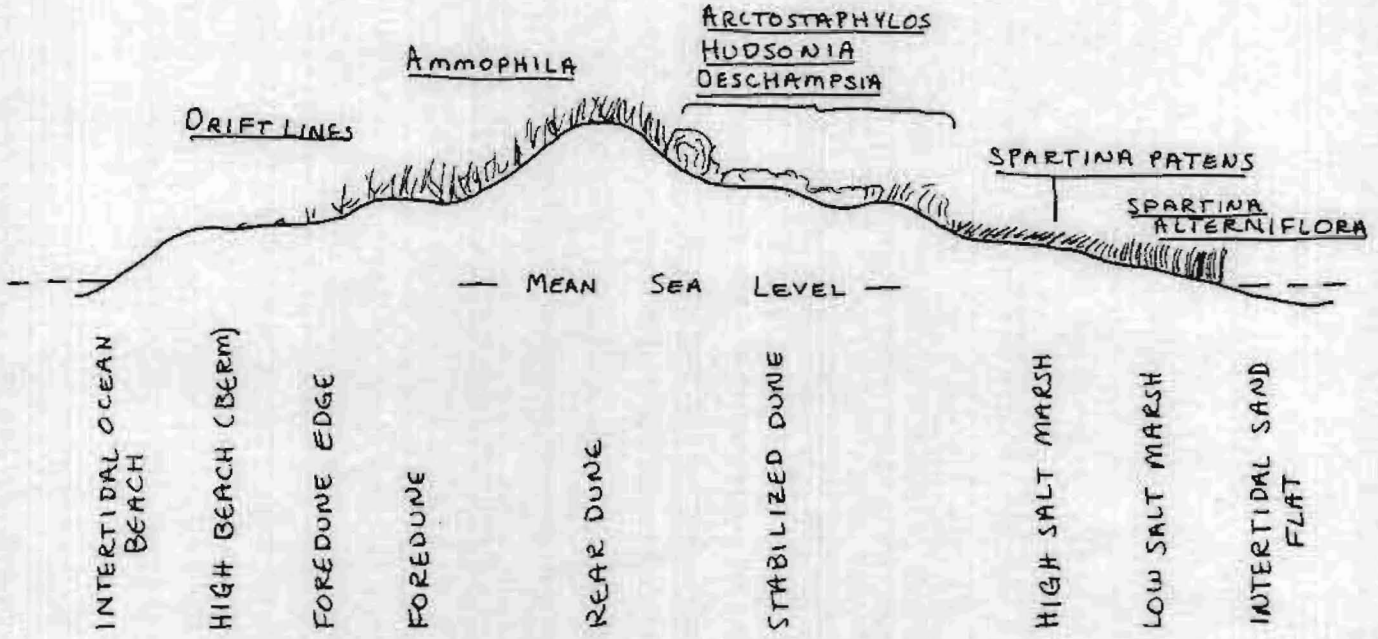


Fig. 3. Representation of the interrelated environments on a barrier beach.

From Godfrey & Godfrey, "Ecological Effects of Off-Road Vehicles on Cape Cod," Oceanus, 23 No. 4, Winter 1980-81, p. 59.

were found to have highly variable populations. One researcher was able to determine that off-road vehicles could cause a ninety percent reduction in diatom populations. But also showed that this effect was very short term, normal conditions often restored by the next tidal fluctation.[20] Due to its variability, it is most resistant to off-road vehicle impact. Tracks left behind are often washed away by the next tide. The research team declined to draw any definite conclusions regarding this part of the beach except to say that:

> "...natural changes appeared to overwhelm vehicle effects on this particular beach."[21]

Driving in this area is difficult since the sand is soft and shifting. Vehicles easily get bogged down here.

Moving across the beach, we next turn our attention to the other side of the berm crest where normal high tide reaches, to the high beach where biological activity is high as is off-road vehicle use. This section of the beach is flat and open, leaving it vulnerable to vehicle passage for which it is attractive. It is occasionally washed over by very high tides so vehicle impact is more apparent, not hidden, abated, or repaired by natural processes as it is on the foreshore. There is little zoetic life in this zone so the impacts are more physical and aesthetic. Sea water washed sand is stabilized even after drying by the formation of a salt crust which holds the sand particles together. Vehicular traffic breaks up the crust and leaves ruts which

persist. In addition to being an eyesore, this has a tendency to increase aeolian (wind) transport of sand.[22]

On the landward side of the high beach is the drift line zone one of the most delicate and important sections on the beach. It is here that high spring and storm tides deposit organic material and other marine debris. The drift line deposits are rich in microorganisms which decompose the organic matter resulting in nutrient rich sand. Drift fragments of Ammophila breviligulata (American beach grass) also take hold and begin to grow in this zone. These plants extend rhizomes amd shoots which trap sand particles. This process is the beginning of a new dune and is illustrated in Figure 4.

The passage of just one vehicle can cause severe damage as seen in Figure 5. Sand and organic material is dispersed by wheels hastening the drying process. This dessication has been determined to cause bacterial populations to be halved resulting in a much slower rate of decomposition.[23] Shearing and compressional forces physically destroy plant material killing off newly sprouted Ammophila and other plants taking hold in the drift. Since only a few vehicle passes are required to cause maximum damage to the drift line, there is little difference between the passage of ten or one hundred vehicles over the same spot.[24] Figure 6 shows the damage that just one pass may do to a newly established stand of Ammophila. From these studies, it is apparent, as concluded by the researchers that there is no

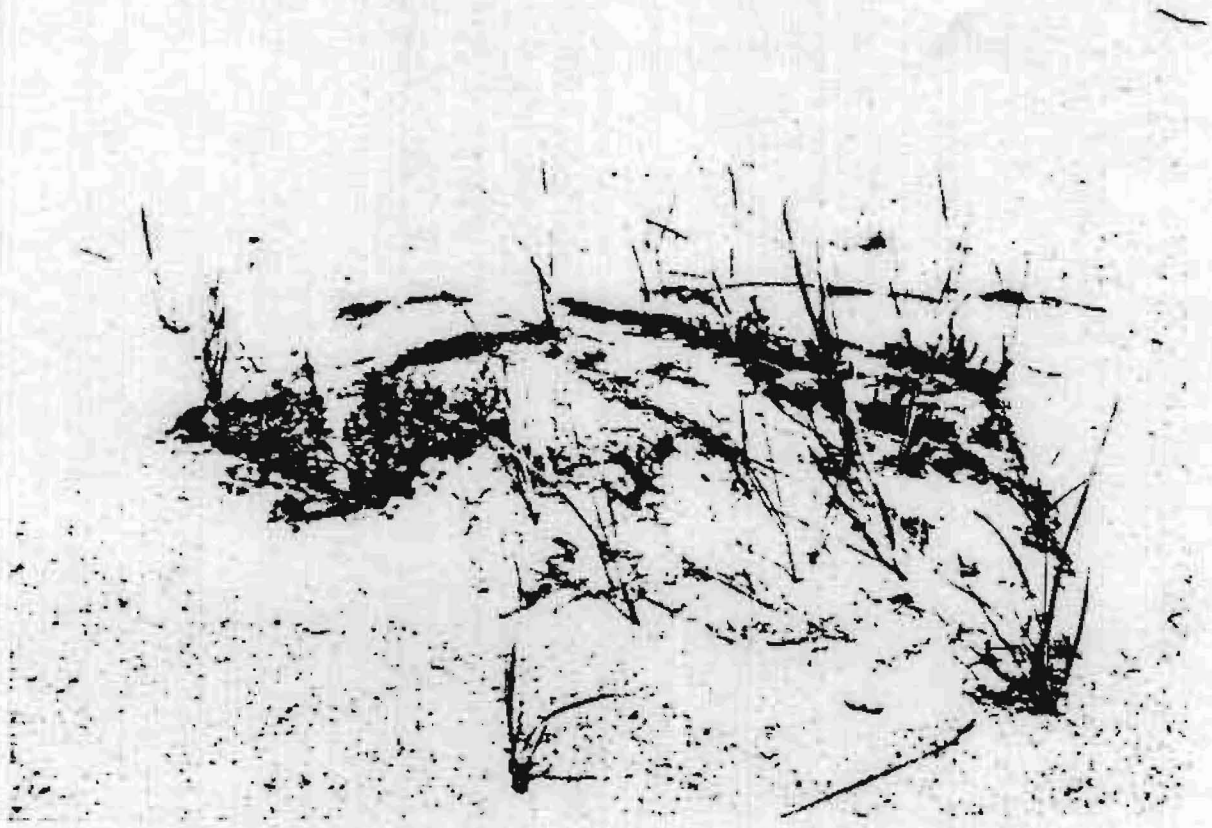


Fig. 4. The Ammophila seen here has grown up from rhizome fragments in the drift deposit forming the beginning of a dune.

From Leatherman & Godfrey, UM-NPSCRU Report No. 34, 1979, p. 5.

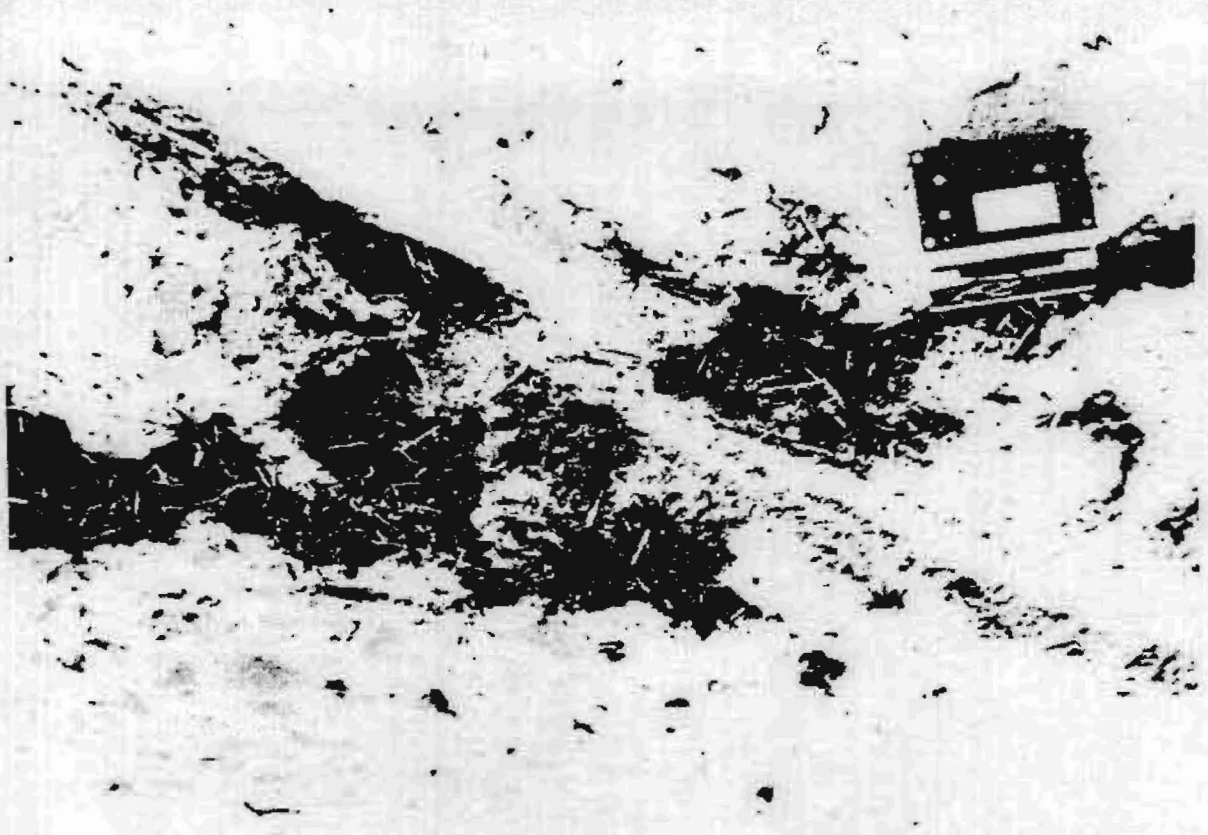


Fig. 5. One vehicle pass can lay waste to the drift.
From Leatherman & Godfrey, UM-NPSCRU Report No. 34, 1979, p. 5.

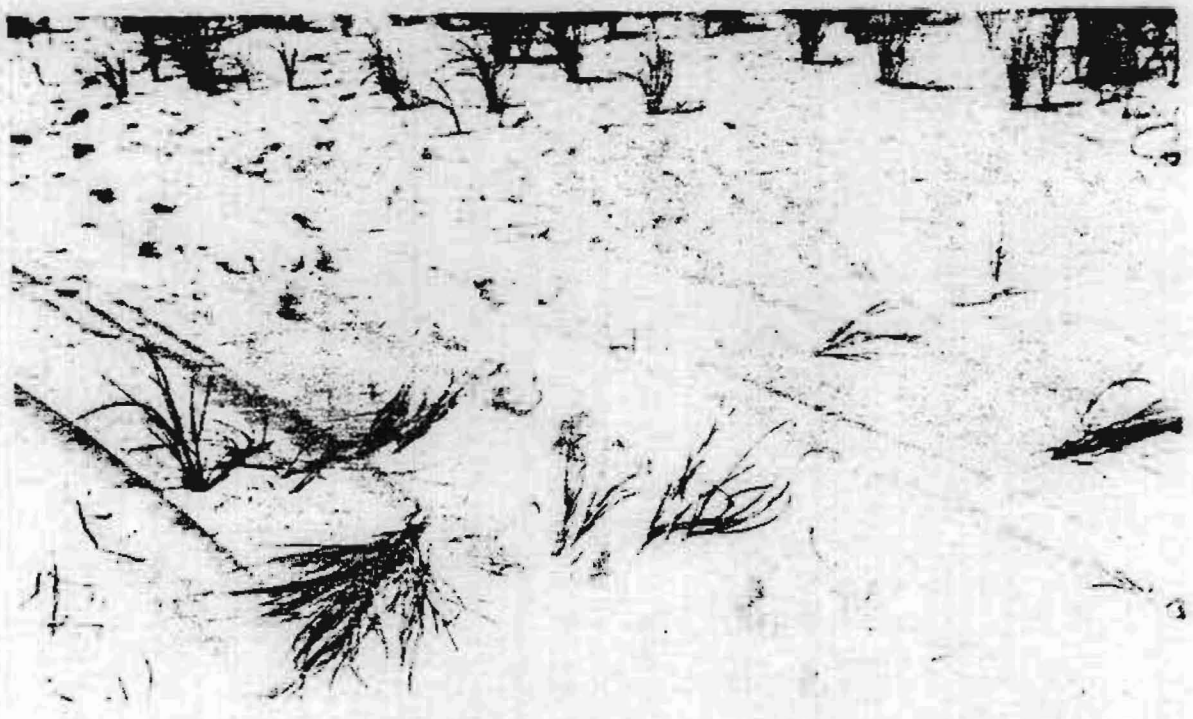


Fig. 6. These Ammophila plants have been severely damaged and left to dessicate by just one vehicle pass.
From Broadhead & Godfrey, UM-NPSCRU Report No. 32, 1979, p. 212.

"carrying capacity" of Ammophila for off-road vehicles.

Also inhabiting the backshore area are a number of birds, both nesting and transient. The Least Terns (Sterna albifrons) are of particular interest and concern on the Cape Cod National Seashore. Opponents of off-road vehicles claim that vehicular traffic has an adverse affect on these nesting birds. However, counts over the years 1974 to 1977 showed that the populations during these years were as high as for any other period in spite of the dramatic increase in off-road vehicle use.[25] Table 1 illustrates this.

The 1978 report by Bradford Blodget should allay the fears of those who think that proximity of legally used off-road vehicles will disturb nesting terns. His studies indicated that the birds were more disturbed by humans and dogs approaching on foot than by off-road vehicles at the same distances. Actually, a vehicle can approach twice as close as a person, as near as five meters, before causing nesting birds to take flight.[26]

Tern nesting areas on the Seashore are enclosed, well marked and patrolled by wardens. According to Blodget's observations, enclosures eliminated most of the nest destruction by vehicles. But even nests in unfenced areas appear to be relatively unscathed by off-road vehicles. Burroughs reported that jeeps caused only 1.5 percent in 1963 and 1.8 percent of nest destruction in 1963 and 1964.[27] Their nesting habits provide some protection, selecting sites near boards, bottles, and other debris normally

Table 1. Number of breeding pairs of Least Terns on Cape Cod, Barnstable County, Massachusetts.

Year	Number of pairs
1921	100
1923	150
1935-36	255-300
1945-52	700
1964	500
1972	360
1973	609+
1974	808+
1975	587+
1976	989
1977	886

From Blodget, UM-NPSCRU Report No. 26, 1978, p. 23.

avoided by drivers.[28]

In Blodget's field experiments disturbance was judged on the basis of causing upflight, flight time, and nest desertion. Table 2 shows statistics for one test site at the Race Point Coast Guard colony over a thirty-eight hour period.

Observations in 1975 of 111 Least Tern nests along the Provincetown beach showed 210 eggs only one of which was crushed by a vehicle driving on the beach. Seventy-seven hatched successfully. Of the others, 127 were thought to have been taken by foxes, one was taken by a foolish person, three were washed away, and one failed to hatch and was deserted.[29]

In addition, it was found that terns become acclimated to vehicles as well as people and will return to their nests after flight[30] and no nests in the Race Point Coast Guard colony test area were thought to have been deserted as a result of the presence of people.[31]

From these studies, it is apparent that off-road vehicles should be able to co-exist with tern colonies. This co-existence requires that the off-road vehicle users be educated and willing to cooperate in the effort to protect tern colonies and foster their survival. Unfortunately, their is a sector of the population who due to ignorance and/or malicious intent may drive wrecklessly through colony enclosures resulting in rampant destruction.

During certain very high tides, off-road vehicles still

Table 2. Number and duration of upflights in response to disturbances at one section of the Race Point Coast Guard Least Tern colony.

Causes of Disturbance	Number of Upflights	Upflight time(sec)	$\bar{X}$ Upflight (sec/upflight)
Research workers	------	--------	--------
Beachwalkers	50(40%)	5100(51%)	102.0
Off-road vehicles	25(20%)	1465(15%)	58.6
Unknown	32(26%)	1733(17%)	54.1
Mate	11(9%)	1091(11%)	99.2
Dogs	5(4%)	531(5%)	106.2
Piping Plover	1(1%)	20(1%)	---------
Gulls	1(1%)	47(1%)	---------
TOTALS	125	9987	79.9
Upflights/hour	3.3		

From Blodget, UM-NPSCRU Report No. 26, 1978, p. 34.

on the beach may be forced to drive through nesting colonies causing direct contact and severe damage. Blodget noted only one significant case of this sort between 1975 and 1977 when tides forced vehicles into the Race Point Light tern colony. That incident resulted in twelve nests being washed away and twenty being run over.[32]

Several migratory shorebirds use Cape Cod as a feeding and resting ground. Blodget carried out some studies on Plover and Sandpiper in the Coast Guard Beach area of the Seashore. His survey covered three aspects: flushing of feeding birds, flushing of resting birds, and the effects on food supply as the result of off-road vehicle use. He found that ninety-five percent of feeding birds were on the tidal flats, too far away to be affected by vehicles.[33] Resting birds suffer a much greater effect since they are commonly found on the high beach where off-road vehicles are used. When forced to move, they resettled quickly and have a tendency to use the fenced Tern areas.[34]
Although vehicular traffic may reduce the infauna to a small extent, the food supply did not appear to experience significant impact. Plovers may even benefit by feeding on food turned up by passing wheels.[35]

Beyond the backshore lies the results of a successful drift line where new, low dunes exist. This foredune zone is extremely vulnerable to off-road vehicles. The damage they cause can be looked at on both the geologic and botanic fronts.

Foredune vegetation is necessary for the development and stabilization of new dunes on their seaward march. Ammophila is critical in this area since it is capable of taking hold and growing in sand and serves to catch wind blown sand, trapping it and building up new dunes.

The experimental site was located in the Race Point beach and dune area, an accreting beach.[36] Here researchers created a figure-eight track shown in Figure 7. The experiments tested straight driving, turning, and climbing effects on high beach, foredune, and backdune with both heavy and moderate vehicle traffic.

It was found that Ammophila may grow toward the sea at a rate a of two centimeters per day or as much as one to two meters during a growing season.[37] This rate may be completely halted by as few as 50 vehicle passes.[38] The rate of vertical growth of the foredunes studied was 1.2 meters over four years, while it built outward more than five meters.[39]

Ammophila survives the aridness of surface sand by virtue of its rhizomes which grow six to eight inches below the surface where the sand is not so dry. From these rhizomes roots grow down into the moister sand and shoots grow up through the dry sand to the surface.[40] Unfortunately, due to this survival mechanism, these plants are highly susceptible to damage. As shown earlier in Figure 6, one vehicle pass will cause damage and as few as one hundred vehicle passes is sufficient to completely

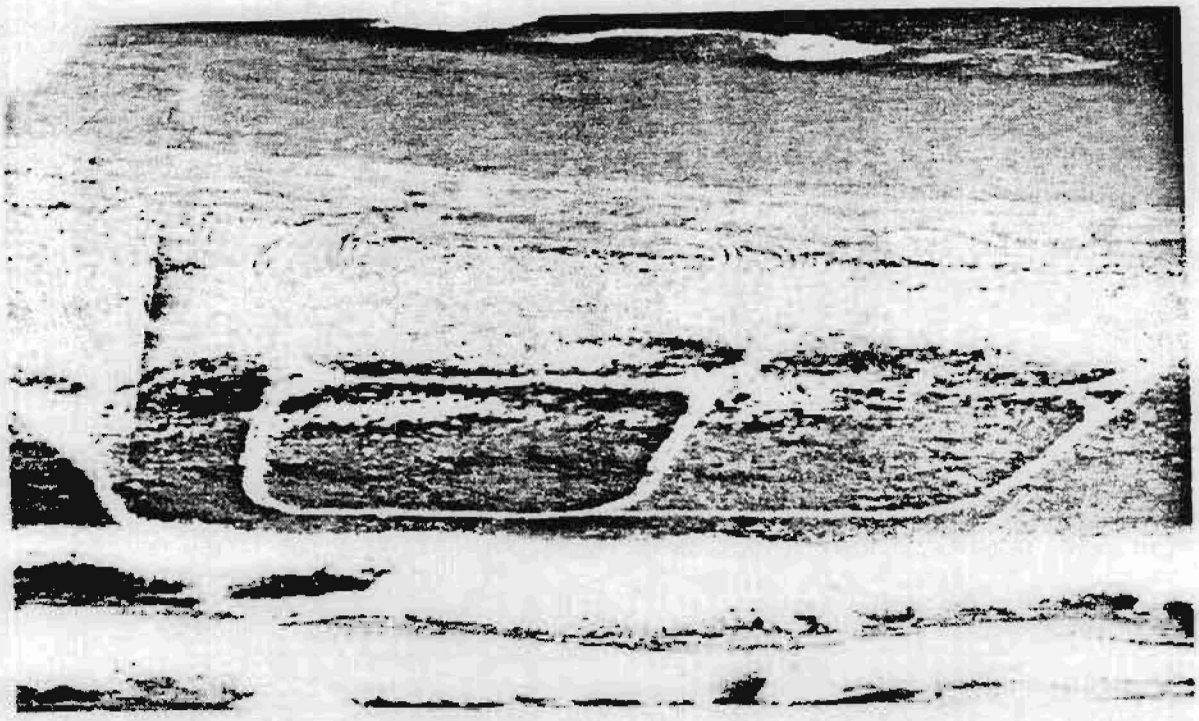


Fig. 7. The "Race Point Racetrack" was a figure eight track constructed to examine environmental empact on beach and dune.

From Brodhead & Godfrey, UM-NPSCRU Report NO. 32, 1979, p. 154.

destroy a community of beach grass.[41] Such traffic not only lays waste to the surface shoots which come into direct contact with the tires, but also, due to the shearing and compressional forces, are enough to devastate the rhizomes from which the life of Ammophila springs. In addition to this damage, plant fragments are stirred up to the surface where they become dessicated and can no longer foster growth. Here again a conclusion of no "carrying capacity" was founded.[42]

Revegetation by Ammophila begins almost immediately after stress due to off-road vehicles is curtailed. It does so by extending rhizomes left in tact under the sand. Within four years, recovery is usually complete although ruts made by wheels may remain for many years thereafter.[43] Recovery appears to be slightly more complete and quicker on the foredune which received new sand more readily than on the backdune area.[44]

In addition to disturbing the vegetation, vehicle wheels mix dry sand with the wet sand below, disrupting the important moisture boundary, and facilitating drying.[45] Once dry, sand is easily carried by the wind robbing the growing dunes of needed sand. Recovery from this type of damage is expected to be rapid once vehicle use is stopped. A new wet/dry boundary will be established.

Vehicular impact may have even further reaching physical consequences. It may change the shape of the dune itself, causing a once sloping dune to become steep and more subject

to erosion. Some sand is moved downslope as a direct result of tire action. Sand tracer studies using colored sand revealed that one vehicle running perpendicular to an eight degree slope will move an average of two thousand square centimeters of sand.[46] The more parallel a vehicle's approach to the slope, the less sand it displaces. Taking the dune at a diagonal reduced sand movement by fifty-one percent or better.[47] Figure 8 shows how dune busting has affected the face of one segment of dune.

In addition to physically moving sand, track orientation is an important factor. A track bare of vegetation and oriented toward prevailing winds is particularly susceptible to erosion and a hollowing out of the dune. Tracks through the vegetation in the back dunes create a wind tunnel affect, broadening the bare areas.[48] These destabilizing effects are known as blowouts. On the other hand, tracks that were oriented perpendicular to the prevailing winds exhibited accretion.[49]

Still another area of the seashore is the stable, established dunes. Here, beach grass has given way to heathland and grassland communities in the succession which will eventually lead to an oak-pine woodland. On Cape Cod, low shrubs including bearberry, beach heather, bayberry, huckleberry, blueberry, and beach plum inhabit the dunes. These communities like Ammophila were found to have no "carrying capacity" for vehicular traffic. As few as fifty passes are enough to wreak havoc with this stabilizing

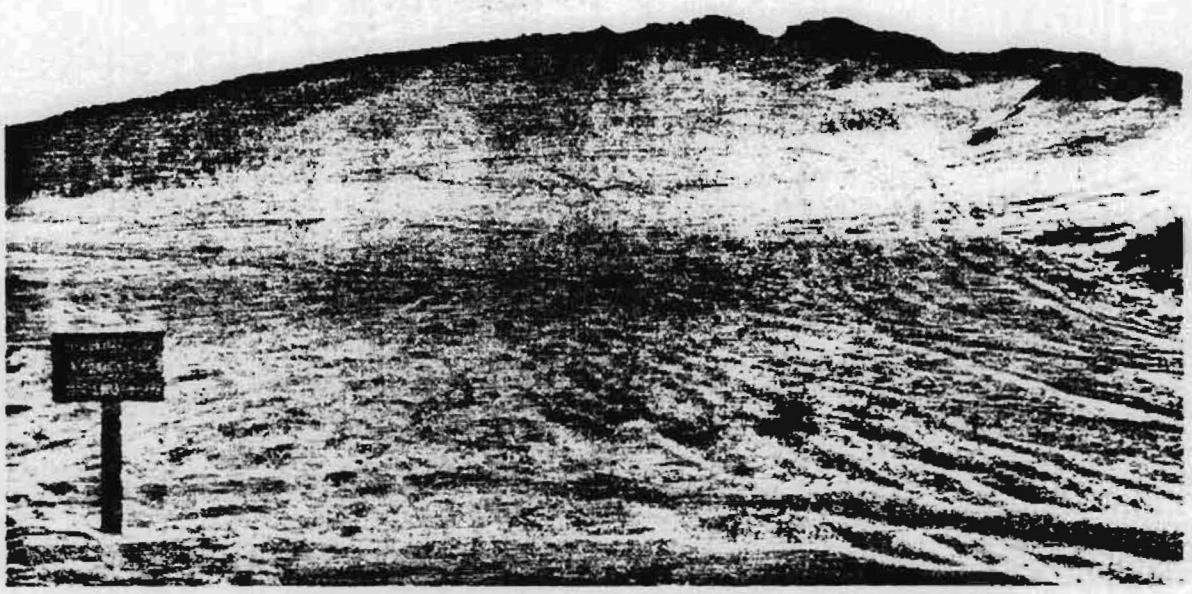


Fig. 8. Dune busting left this segment of dune near Rsce Point exposed to wind erosion and the resulting blowout.

From Brodhead & Godfrey, UM-NPSCRU Report No. 32, 1979, p. 126.

vegetation.[50]

The investigators in this section of the seashore looked at three different types of communities: bearberry, beach heather, and hair grass. These were chosen because they are practically ubiquitous in the Province Lands and they are low enough to drive over. Taller plants such as bayberry and beach plum discourage traffic due to their height. The test communities were surveyed as to their condition as a result of only fifty vehicle passes (medium impact) and three hundred passes (heavy impact) and their recovery rate over a four year period.[51]

Bearberry, Arctostaphylos uva-ursi, is a woody shrub which spreads by extending its above ground stems or stolons. Although leaves and twigs were completely destroyed by a few vehicle passes, their hard woody stems survived. Thanks to these creeping stems, new twigs and leaves arose to fill in leaving no visible traces of vehicle impact within four years.[52] This is an optimistic picture since such rapid regeneration would be doubtful if the stems had been broken or if severe erosion had occurred. Other tests have shown that driving through hillside communities of bearberry leaves deep tracks which are not nearly as quickly filled in as the brush above ground.[53] A comparison of Figure 9a and 9b shows damage and recovery in one test site.

Communities of beach heather, Hudsonia tomentosa, are not so fortunate. Due to both their fragile growth habits

Fig. 9a. Arctostaphylos (bearberry) after 300 Jeep passes. August 1974.

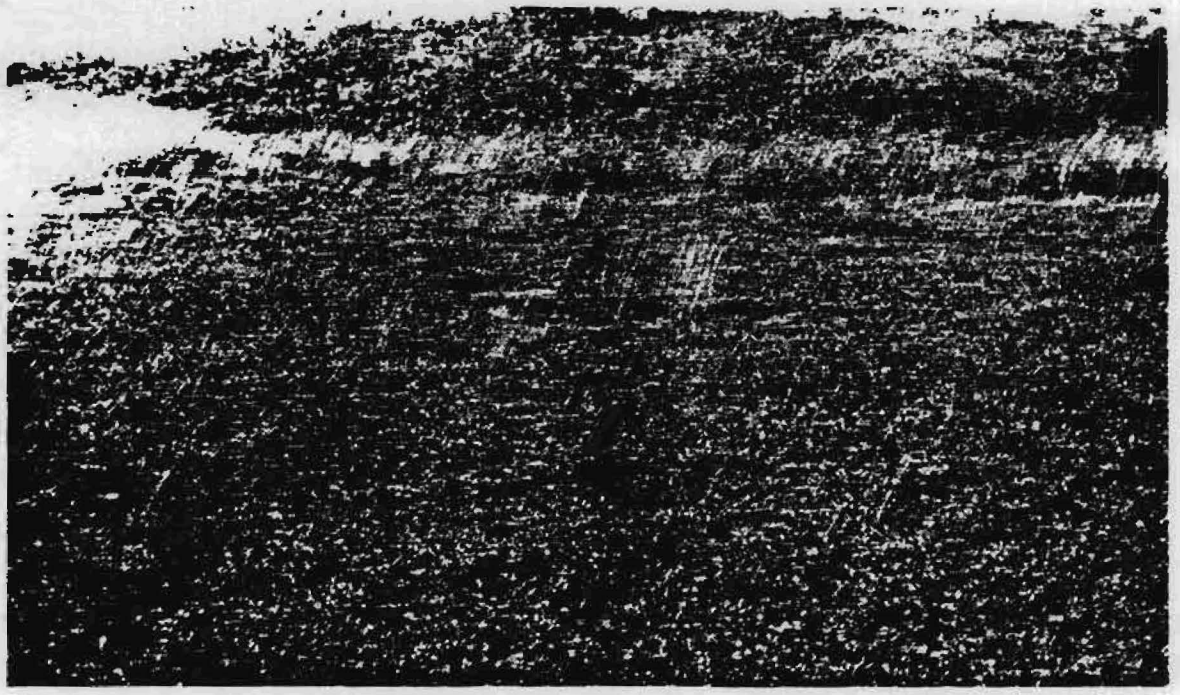


Fig. 9b. Arctostaphylos appears almost completely recovered after four years. 1978.

From Brodhead & Godfrey, UM-NPSCRU Report No. 32, 1979, pp. 206 & 209.

(stiff and upright) and lack of regenerative stems, they exhibit a more lasting impact from vehicular traffic than bearberry. Hudsonia plants are completely destroyed by tires. Fewer than fifty passes is enough to wipe out a community of Hudsonia leaving bare sand, vulnerable and open to erosion.[54] They must reproduce by seed, a long and dubious process. Even four years after traffic stopped, tracks were readily apparent through the beach heather and seedlings had just begun to colonize the area.[55] This can be seen in Figure 10a and 10b. Exposed as these areas are for so long, they are frequently subject to wind erosion and blowouts.

The grassland communities, dominated by hairgrass and lichens, Deschampsia flexuosa and Cladonia species, manifest still different impacts. Healthy clumps of grass resist tire impact because of the manner in which they grow. Although most of the above ground vegetation was destroyed as a result of fifty vehicle passes, the surface of the ground was not put asunder, leaving root stocks intact enabling rapid regrowth.[56] Hairgrass displays recovery nearing pre-impact biomass after three years.[57] Damage to this community and its recovery are shown in Figure 11a and 11b. Without their root systems, hairgrass would be forced to rely on seeds for revegetation as is beach heather and the process would be much longer.

The life of the lichen is not so fortunate. Cladonia are fragile fungus/algae associations which are easily

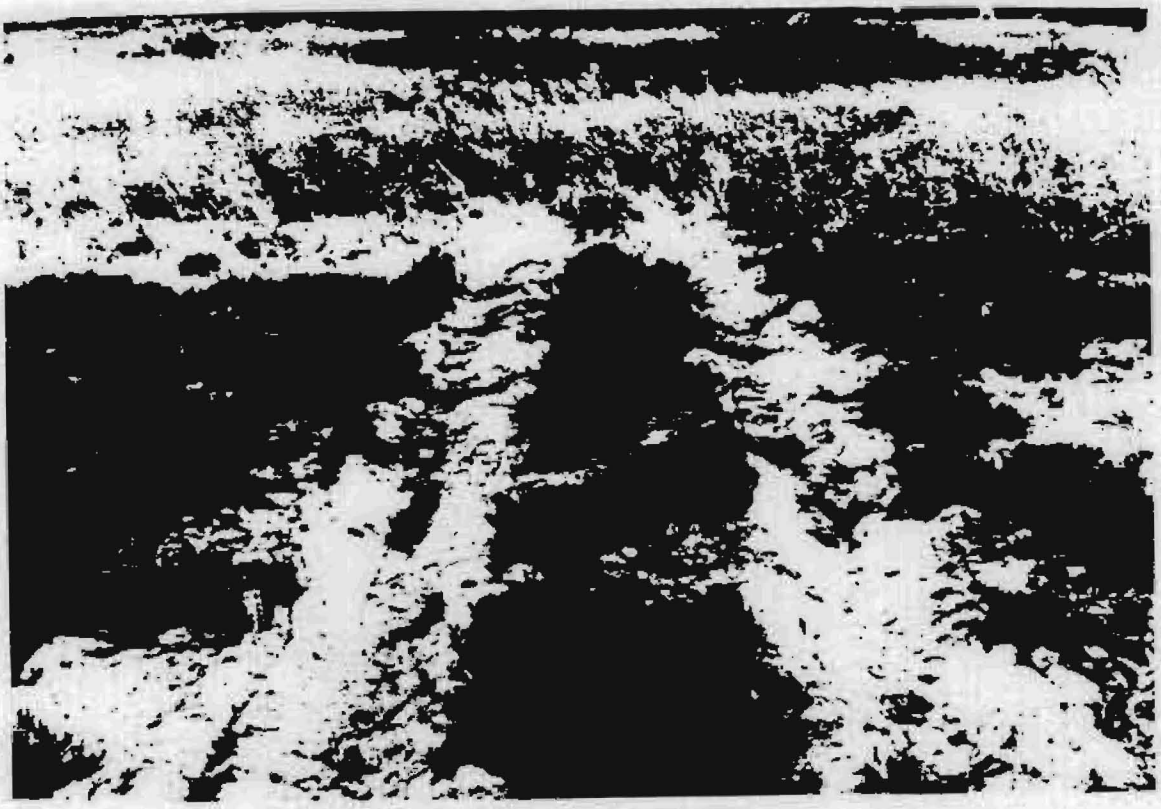


Fig. 10a. Hudsonia (beach heather) after 300 Jeep passes. August 1974.

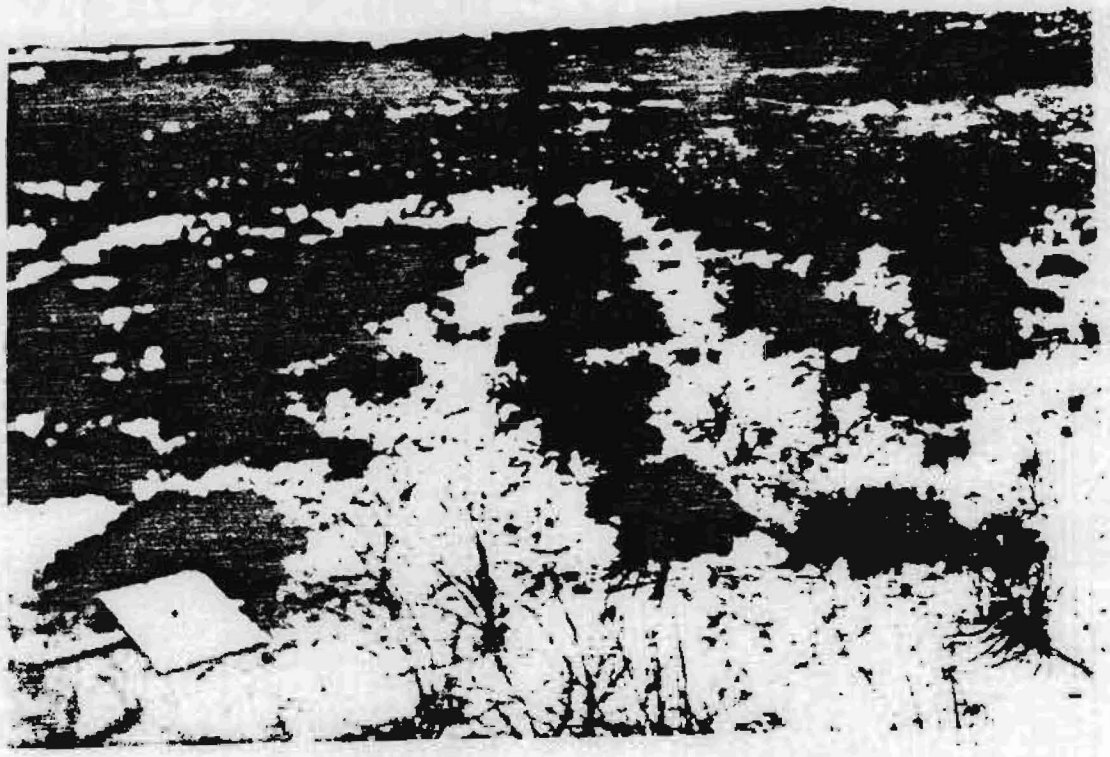


Fig. 10b. Three years later, seedlings have begun to invade but tracks are still very visible. 1977.

From Brodhead & Godfrey, UM-NPSCRU Report No. 32, 1979, pp. 203 & 205.

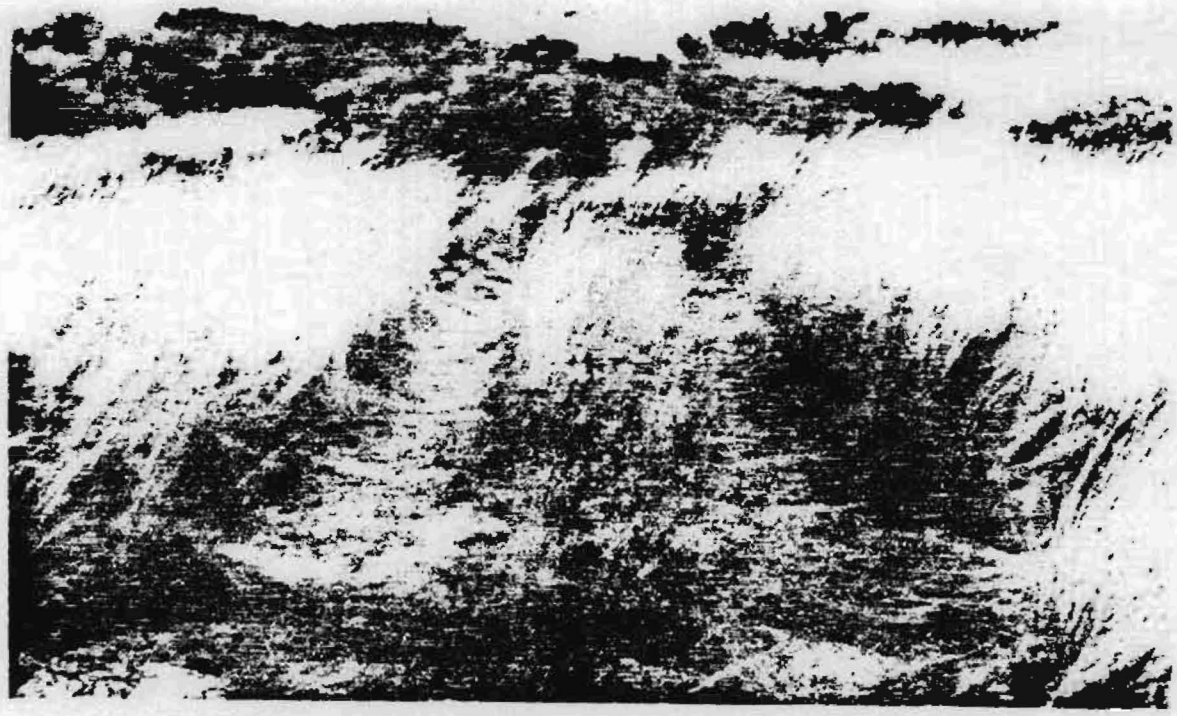


Fig. 11a. A Deschampsia caespitosa/Cladonia community (hairgrass/lichen) after 300 Jeep passes. August 1974.

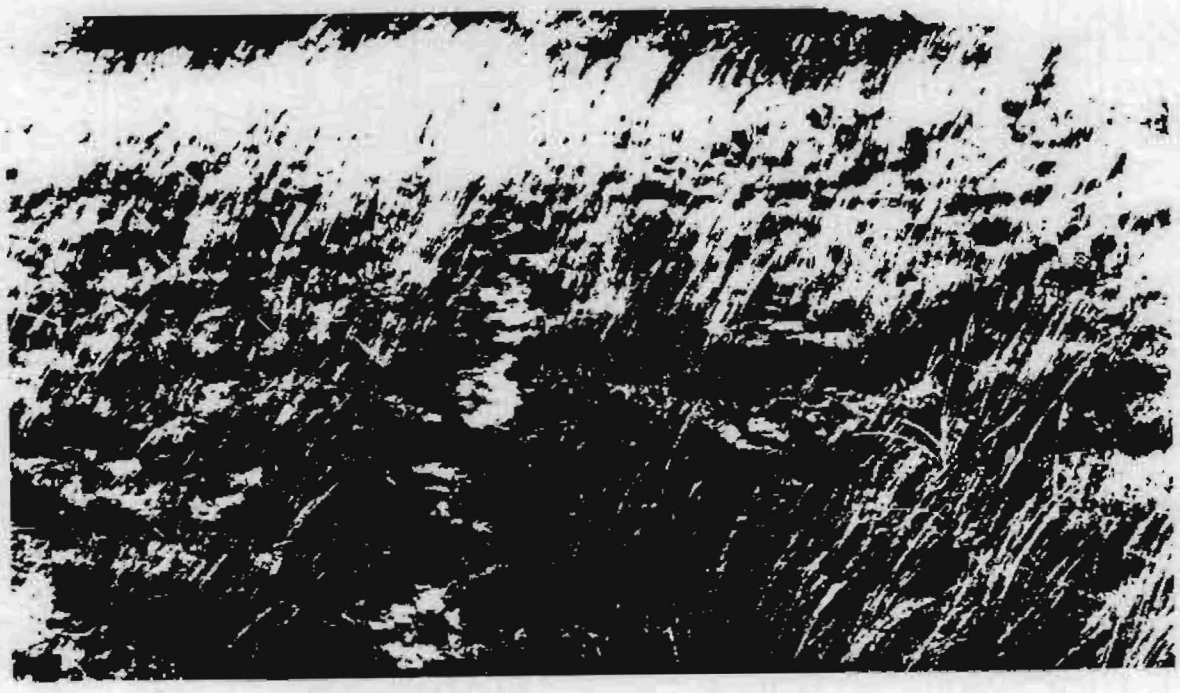


Fig. 11b. Much of the track has been filled in or hidden by the Deschampsia but bare areas are apparent after four years. Cladonia recovery is not evident. 1978.

From Brodhead & Godfrey, UM-NPSCRU Report No. 32, 1979, pp.209 & 210.

destroyed and greatly lacking in recovery powers. They live solely on the surface with no roots from which new growth may spring. Regrowth may be initiated by fragments or spores but, being lower plants both processes are very slow.[58] Thus, the lichen population once disrupted will exhibit long lasting damage.

Of all the ecosystems of the Seashore, the salt marshes and surrounding sand flats are the most damaged by off-road vehicle traffic. This intertidal ecosystem is a primary producer for estuary and near shore food webs, as well as, providing a unique habitat for a variety of flora and fauna.[59] By its very nature, the salt marsh can be thought to be divided into zones. Six sites in these zones were used for the salt marsh studies. Proceeding from the dunes out, there were: dune/marsh edge, transition zone, high marsh, low marsh, sand flats, and tidal channels.[60]

Moving off the dunes and into the marsh, we encounter the dune/marsh edge and transition zone, dominated by beach grass and then salt meadow cordgrass (Ammophila and Spartina patens var. monogyna, the erect form).[61] These areas receive salt spray and occasional doses of salt water with very high tides. The grasses help keep sand in place preventing erosion. This area is a favorite for off-road vehicle users because it will support vehicles and is relatively easily accessed.[62] A barren track left behind as a result of tires destroying the vegetation is shown in Figure 12. This allows sand to be easily eroded,

Fig. 12. Barren track left behind by off-road vehicles separates the dune in the foreground from the high marsh.

From Brodhead & Godfrey, UM-NPSCRU Report No. 33, 1979, p. 38.

destabilizing the dune and filling in the salt marsh. Although one hundred vehicle passes were enough to cause severe damage, recovery was rapid when test areas were protected. In some cases, recovery appeared to be almost complete in two years.[63] Figure 13a and 13b illustrate impact and recovery in this area.

Next encountered is the high marsh where Spartina patens in its decumbent form is the dominant vegetation. This and the other resident vegetation tolerate the spring tides. This form of S. patens grows in a mat-like manner unlike the Ammophila and marsh edge S. patens. This coupled with very supple leaves and stems allows it to resist vehicle impact better than most other plants. This area can withstand twice the number of vehicle passes as the transition zone before being rendered a bare track. However, its powers of recovery are not very good and revegetation is very slow and is hindered by tidal flow.[64]

The saltmarsh cordgrass, Spartina alterniflora, and glasswort, Salicornia ssp, the dominant communities of the low marsh experience little vehicle use and, therefore, show little damage.[65] This is probably because the area is flooded by tides twice daily leaving it ill-suited to driving. The substrate here is marsh peat which is greatly compressed by just one vehicle pass and becomes too wet and miry for convenient driving. A one hundred pass test had to be abandoned when the test jeep became stuck after only completing ninety passes.[66]

Fig. 13a. A pre-existing track, left, was closed with sand bags at the same time the track on the right was made by 200 vehicle passes at this high marsh site. in 1975.

Fig. 13b. After two years, recovery had begun but salt pannes are evident and have retarded recovery.

From Brodhead & Godfrey, UM-NPSCRU Report No. 33. 1979, pp. 40 & 41.

Studies did show that vegetative biomass was substantially reduced due to fewer than ninety passes as illustrated by Figure 14a and 14b. Regrowth was slow to occur partly due to the formation of salty ponds called pannes in the deep ruts left by tires. Ruts were still visible after four years,[67] as seen in Figure 14c and 14d.

The sand flats are marked by the lower level of spring tides and are the last area before reaching the actual water environment.[68] These should be the base for the formation of new salt marshes but on Cape Cod have remained barren to a large extent. These bare expanses seem to be maintained by the destructive forces of off-road vehicles.[69] Their impact is sufficient to inhibit pioneer species from getting a hold.

The sand flats are home to a number of amphipods, polychaetes and mollusks. Studies by Wheeler indicate that populations of Scolopolos fragilis, a polychaete worm, may be decimated by only fifty passes.[70] Similarly, only fifty vehicle passes per day killed one-third of a test population of soft-shelled clams (Mya arenaria), an important commercial mollusk. One thousand passes completely wiped out such populations.[71]

In addition to direct affects on flora and fauna, several geomorphic problems arise due to the use of vehicles in and around salt marshes. As mentioned earlier, the zone where the salt marsh and dunes run together is subject to severe erosion which is accelerated as vehicles kill off the

Fig. 14a. Tracks left in low marsh Spartina alterniflora by one pass (left) and ten passes (right) in June 1974.

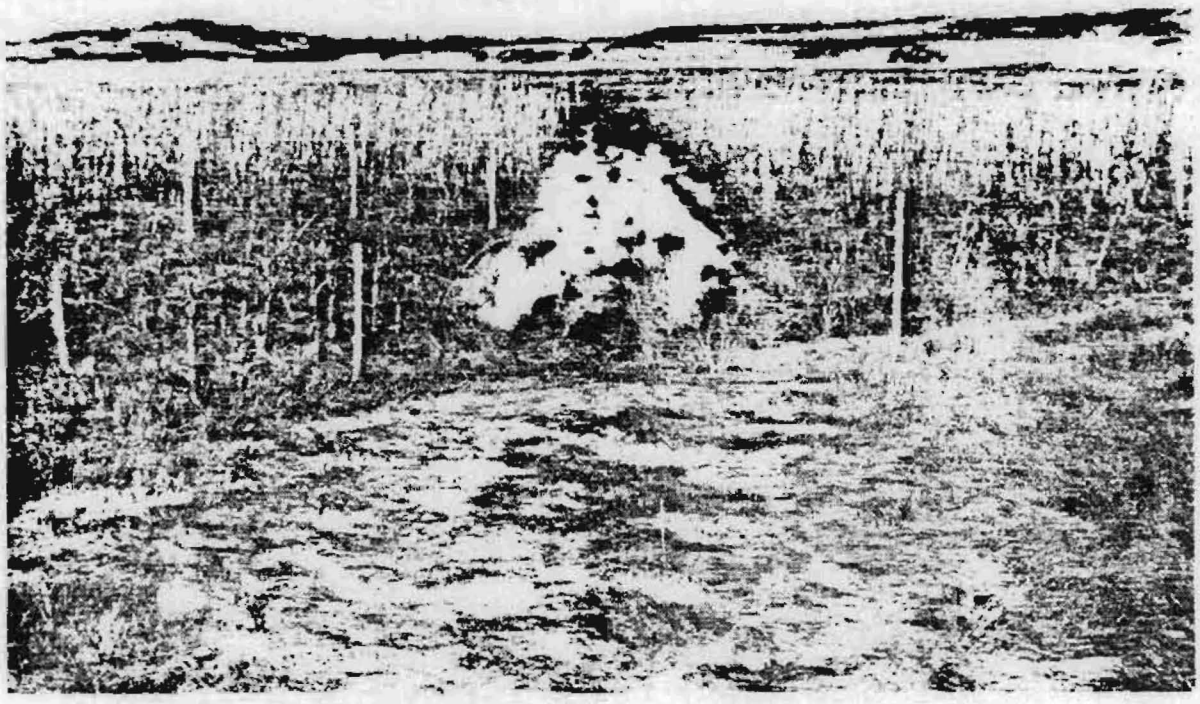


Fig. 14b. Impact of 90 Jeep passes on low marsh (S. alterniflora) and high marsh (S. patens) in June 1974.

From Brodhead & Godfrey, UM-NPSCRU Report No. 33, 1979, pp. 42 & 45.

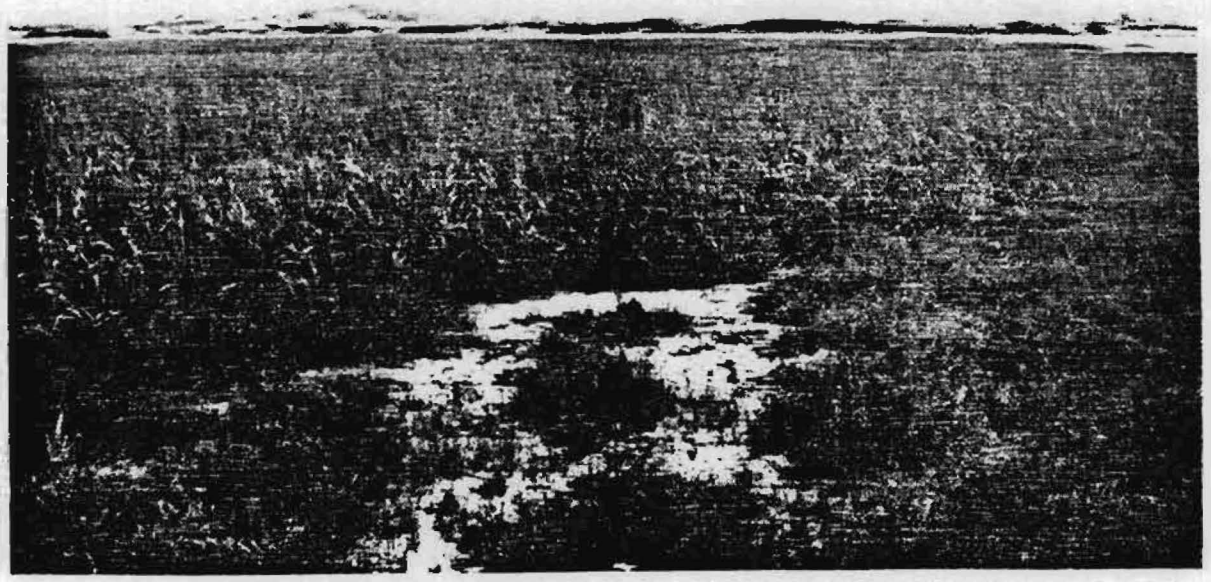


Fig. 14c. Salt panne persists after two years. S. alterniflora has shown significant recovery. 1976.

Fig. 14d. Four years later, the panne is almost completely re-vegetated. Ruts are still visible. 1978.

From Brodhead & Godfrey, UM-NPSCRU Report No. 33, 1979, pp. 45 &46.

grasses which serve to hold the sand in place. Sand, free to move, is often deposited on the marsh.[72] Accelerated infilling is also the result of vehicles driving on the high marsh. Traffic has formed sand channels in addition to the natural ones through which flood tides carry sand, depositing it on the marsh. The channels are too deep for typical marsh flora to take over to slow the passage of water.[73]

Vehicles also cause a packing down of the substrate. Sandy areas become pavement-like, inhospitable to plant or animal life. Deep ruts in peat or sand may remain filled with water even during low tides and become briny sinks, a clearly different habitat than the surrounding marsh.

No vegetation is immune to vehicle traffic nor is the substrate. The findings are clear in all of the various ecosystems of the Cape Cod National Seashore: There is no "carrying capacity" for off-road vehicles.[74]

Despite the conclusion of no carrying capacity, Leatherman and Godfrey and their associates prepared a number of specific recommendations for the use of off-road vehicles on the Cape Cod National Seashore based on their research.[75]

1. Restrict ORV use to the outer ocean beach seaward of the drift line whenever possible. This area is the most dynamic and if damaged, most likely to recover quickly.
2. Prohibit driving in the upper backshore area where the

drift line and young dunes could be severely impacted by little traffic.

3. Close beaches that are too narrow and those rendered too narrow by extremely high tides so that an adequate vehicle corridor is provided to prevent drivers feeling forced to drive on the drift line, dune toe, or in nesting areas.
4. Protect nesting areas with fences, signs, and public awareness.
5. Orient tracks so as to avoid sensitive areas.
6. Build and maintain wooden ramps to provide beach access over dune lines.
7. Orient dune routes with regard to wind direction to avoid blowouts.
8. Design routes which avoid sharp turns and steep climbs which are more damaging than angled, gradual travel.
9. Restrict traffic to designated routes using cable or impenetrable shrubs to avoid divergence.
10. Maintain routes so that drivers will want to use them instead of avoiding their washboard surface.
11. Close off and initiate repair of routes that have deteriorated and threated stability.
12. Close off particularly sensitive areas such as heathlands and shrublands. Completely close salt marshes and tidal flats.
13. Restrict or eliminate ORV use in dunes and coastal habitats as much as possible and do not open already

closed areas.

14. Close high, migratory dunes in the Province Lands to ORVs and reopen only if tracks can be oriented so as to prevent additional damage.
15. Educate the public to ORV damage to acquire their support and improve voluntary adherence to trails and marked areas.
16. Stress the concept of no "carrying capacity." Remembering that for the most part, a few heavily used trails which are well maintained are better than many little used trails. This also facilitates enforcement.
17. Prevent indiscriminant traffic and enforce regulations using severe penalties.

ADDITIONAL IMPORTANT CONSIDERATIONS

The factors considered in the formulation of an off-road vehicle plan go beyond the purely ecological. Other aspects include aesthetics, traditional uses, user conflicts, socio-economic effects and enforcement. Decisions regarding these elements were left to Herbert Olsen, Superintendent of the Cape Cod National Seashore, with little or no factual information to help him, since there had been no actual studies undertaken in any area except physical ecological damage.

Traditional uses of off-road vehicles on the Seashore are thought to date as far back as the first American settlers. Early farmers used the high marsh grasses called "marsh hay." Lacking motorized vehicles, they fit their horses' hooves with large wooden discs to keep them from sinking into the peat.[76] Motorized vehicles arrived on the scene in the mid-1930's.[77] These vehicles have been used by fishermen, campers, sightseers, joyriders, and the like ever since. Until off-road vehicles became a noticeable problem, those who pursue these activities did so with the same freedom that people enjoying pedestrian activities have. Some of these activities can only be pursued with difficulty without the aid of off-road vehicles. For instance, only surf fishermen who are able to lug their gear to and from

parking areas would be able to engage in this enterprise if off-road vehicles were banned from the seashore.[78]

For years, sightseers have visited the High Dunes using privately owned off-road vehicles or dune taxis.[79] Eliminating travel by these vehicles in the High Dunes may increase vehicle use in areas where they are permitted, adding to congestion. Curtailing vehicle use in the High Dunes would surely eliminate the livelihood of the dune taxis.

Even before the Cape Cod National Seashore was established, there were cottages scattered in the High Dunes near Provincetown. The residents of these cottages have the legal right to access by statutory law (16 U.S.C 495b-3). They may not be denied this right by the Secretary of the Interior or his agencies even in the execution of Executive Orders.[80] If the concept of zoning areas of public lands for certain uses is accepted as viable, the use of off-road vehicles should be adapted and controlled so as to conform to the other objectives of the management scheme.

User conflict and aesthetic values include spatial conflicts, noise pollution, visual intrusion, as well as other considerations. These are highly emotional issues and frequently one way, since only those who do not use off-road vehicles feel the antagonism. These non-users feel a terrific imposition at having to tolerate the use of motorized vehicles which by their mere presence interfere with non-mechanized activities.

In one study, campers involved in non-mechanized activities ranked their reasons for annoyance with proximate motorcycle use:

> "1) noisy 2) out of place in natural setting, 3) frighten animals, 4) dangerous to spectators, 5) dangerous to riders, 6) dusty, 7) harmful to vegetation, 8) visually distracting, 9) smoke and fumes, 10) other."[81]

These factors may safely be extrapolated to Seashore goers seeking peace and solitude and their feelings for off-road vehicles.

The competition for space among recreationists is most fierce between those who are involved in motorized activities and those who are not. This user conflict is one of the main thrusts of the Conservation Law Foundation case. At first consideration, it may not be apparent how certain recreational activities can preclude the enjoyment of others. This is, however, an important factor in setting aside areas designated for certain uses. Mechanized recreation requires a large area while although they may cover less ground, studies have shown that due to the desire for tranquility and solitude, campers and other pedestrian recreationists require a great deal of space as well. One author writes,

> "The magnitude of the off-road recreational vehicle problem lies in the fact that the off-road vehicle user can extend himself as pervasively into the

physical and attitudinal space of virtually all other outdoor recreationists."[82]

Land area is one of the many limited resources making the management of public lands so important.

Those who use public lands for non-mechanized activities are not organized for the most part. They tend to pursue their pleasures alone or in small groups. Their voice, therefore, is not heard above the clamor of Dune Buggy Associations asserting their rights to use the Seashore. When people find that their enjoyment is impaired by the off-road vehicles that they encounter, they have a tendency to move on, to look for another place to pursue their interests. This creates an anomoly when park managers look at demand for certain types of activities. Over time, the result may be a complete displacement of the quieter pedestrian activities.[83]

Even if activites do not spatially exclude one another, those who do not use motorized vehicles are intolerant of the noise which invariably accompanies their use. One researcher concluded that:

"The mere perception of ORV noise is sufficient to degrade the environment significantly for many users."[84]

Aesthetics is to some extent a matter of opinion. Many feel that the scenic value of the beachscape is defaced by the scarped dunes, barren trucks, blowouts and ruts which result from off-road vehicle use, as well as, self-contained

vehicle colonies and the vehicles themselves. Although it is very difficult to verbalize and prove the aesthetic damage caused by off-road vehicles, this is one of the two major themes on which the Conservation Law Foundation has based its case.

Superintendent Olsen was questioned at length regarding the aesthetic damage noted in a rutted beach similar to the scene in Figure 15. He defined aesthetic damage as ruts which are visible to a great many people and which remain for more than one tide.[85] Mr. Olsen also considered aesthetic damage in terms of zones of use. Since at the time, as they are today, off-road vehicles are permitted to use a corridor on the high beach of the intertidal zone, Olsen considers ruts in this area not to be aesthetically damaging to the user group and of no consequence. He said, in effect that ruts are acceptable in this area because it has been designated for ORV and the ruts are a normal result of that activity.[86]

Self-contained vehicle colonies themselves create a substantial visual intrusion on the Seashore as seen in Figure 16. However, Olsen claims that the two colonies allowed under the Plan are practically invisible at distances greater than one mile owing to the curvature of the beach.[87] So, in his opinion, they do not cause aesthetic damage to the Seashore. Thus the zone concept lends some latitude to the question of aesthetic damage.

If limited access is to be permitted and corridors

Fig. 15. Ruts left on Race Point Beach after heavy off-road vehicle use in October 1978.

From Brodhead & Godfrey, UM-NPSCRU Report No. 32, 1978, p. 124.

Fig. 16. The sight at a self-contained vehicle colony near Race Point, Labor Day, 1974.

From Godfrey & Godfrey, "Ecological Effects of Off-Road Vehicles on Cape Cod," Oceanus, 23 No. 4, Winter 1980-81, p. 57.

established for off-road vehicles on the Seashore, then an enforcement plan must be put into action. This requires manpower and money. In formulating the Management Plan, Superintendent Olsen considered this an important factor. In his July 24, 1981 deposition, Superintendent Olsen stated that:

> "...staffing and equipment available for the enforcement of the Off-Road Vehicle Management Plan is wholly adequate for the protection of the lands administered by Cape Cod National Seashore."[88]

And in his opinion:

> "...this plan has proven to be an effective solution to the problem of conserving the resource while providing for its use."[89]

The Conservation Law Foundation, however, charges that the Park Service is not capable of effective enforcement, leaving the Seashore open to damage by off-road vehicles under any plan permitting their use on the Seashore.

Superintendent Olsen feels that the Management Plan facilitates enforcement. Closing off sixteen miles of old trails, not only provides for another large area which is free of off-road vehicles to the delight of other people at the Seashore, but also simplifies enforcement since any vehicle spotted in this area is clearly in violation. Formerly, actual close up observations were needed to determine whether a vehicle was on a marked trail or driving illegally. This requires a large enforcement team and

tremendous time and effort. Under the new plan, since no vehicles would be permitted in certain areas, detection of violators could be accomplished by more distant observation requiring fewer rangers. More rangers would then be free to patrol actual ORV corridors to enforce adherence to the rules there.

In 1980, there were thirty-seven miles of trail for ORV use and only twenty-three people to enforce the laws but in 1981 with the help of the Plan, there were only twenty-one miles of trails open to ORVs and thirty-one rangers, a substantial improvement.[90]

Table 3 shows the violations encountered in the three years since the Plan went into effect. The figures appear to support Superintendent Olsen's views that the Plan would facilitate adherence to enforcement of regulations.

The Conservation Law Foundation charges that enforcement will rely primarily on voluntary observance of the rules. This presents two problems. The first is a knowledge of the rules and their rationale by off-road vehicle users. The Park Service requires that in order to obtain a permit to operate an off-road vehicle on the Seashore, a person must see a presentation. This viewing is intended to inform them of the rules governing off-road vehicle use, the area where ORV use is permitted, and the reasons for the restrictions imposed in off-road vehicles.[91] The second problem, for drivers to recognize where the corridor is located on the outer beach, has to some extent been alleviated by erecting

Table 3. Violations confronted in the first three years of the Management Plan.

Type of Violation	1981	1982	1983
No Permit	94	109	79
Illegal use of Trials	68	81	18
Destruction of Natural Features	13	12	1
Speeding	68	44	42
Other	13	2	49
Total	256	248	189

Statistics provided by the National Park Service.

signs, barriers, and fences.

Indeed, to a great extent enforcement does rely on voluntary compliance. But what laws do not? We have never resorted to closing public roads or doing away with the laws because people run red lights and don't get caught. An added incentive is to establish fines for violating the laws. Vehicles found using areas other than the established routes or parking areas will be fined fifty dollars and permits may be revoked. A maximum fine of five hundred dollars may be charged violators who enter closed areas, causing intentional damage, drive on vegetation, or other premeditated acts.[92]

When we condem one form of recreation, we should at least look at others for the same type of effects. I remember well, the joys as a child of running up and down the dune face, rolling in the sand with delight. I took innocent pleasure in romping through what I now know as the drift line, strewing it about. These are still common activities at the Seashore which threaten the beach and dune. In more recent years, the established backdune areas have been closed to pedestrians and marked with signs. I noted on my last visit to the Seashore that many people had parked their automobiles illegally and were crossing the heathland and grassland areas on foot. They left behind them paths of broken beach heather and paper debris. Other pedestrians invade tern nesting areas frequently out of curiosity unaware or uncaring of the disturbances they

cause.

The decisions to be made regarding the use of off-road vehicles are not easy ones. The considerations are many with far reaching consequences for the environment, off-road vehicle users, and pedestrians recreationists alike complicating the matter further. The National Park Service expended great effort reflecting on these matters and proposing the Management Alternatives.

MANAGEMENT ALTERNATIVES[93]

The Management Alternatives provided a choice of strategies for the designation of ORV routes, overnight use of self-contained vehicles, and limitations on permits issued. This section summarizes those options and looks at some of their consequences.

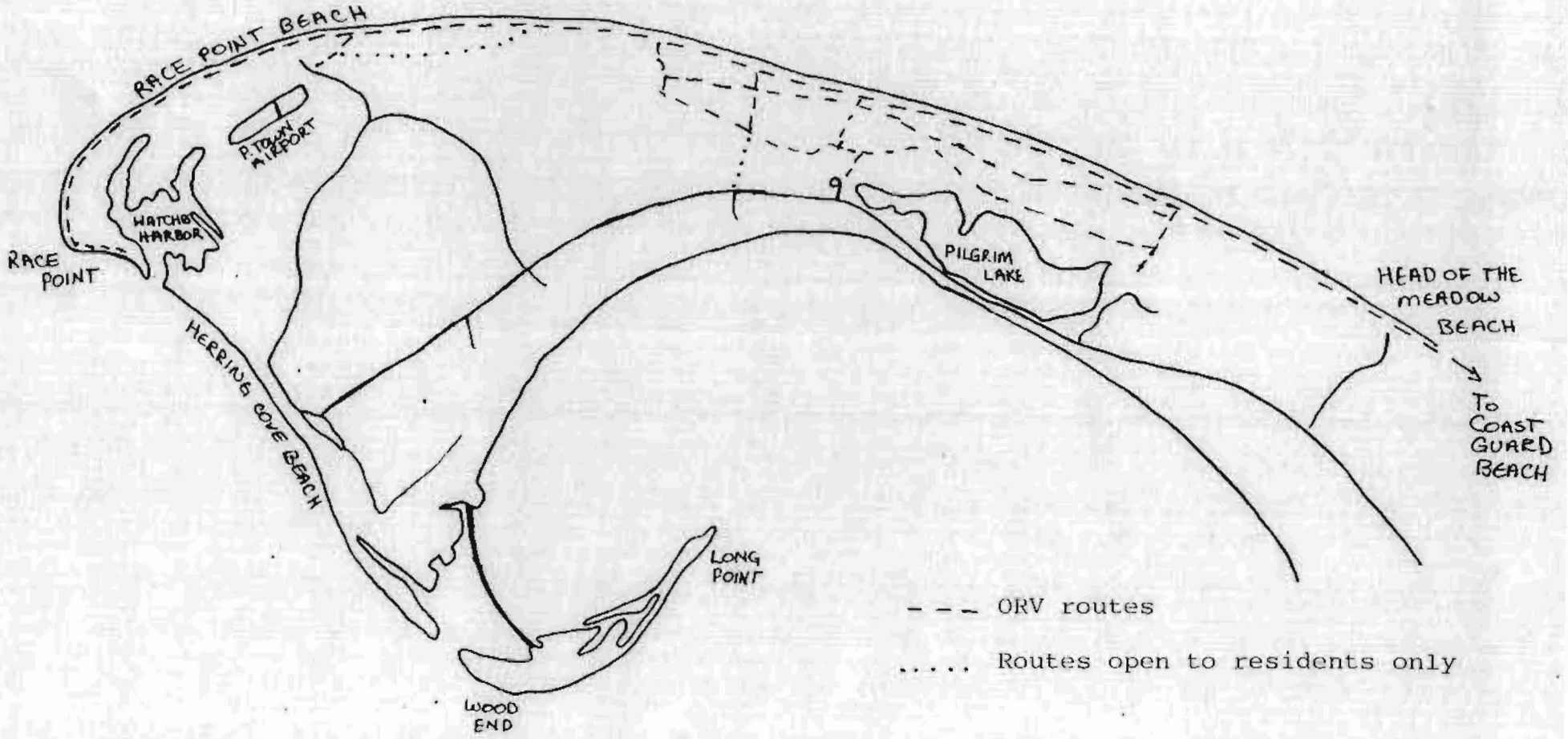
ORV Route Designation.

Alternative 1

Under this option, shown in Figure 17, the Outer Beach from Race Point to Coast Guard Beach, as well as an area in the High Dunes would be open to the public for the use of ORV's. Vehicles would be restricted to a corridor on the beach and marked trails in the dunes. This alternative was closest to the situation existing at the time the plan was proposed. The trail system would include most of the trails in use on the dunes at the time except the area between Hatches Harbor and Long Point and another 1.1 mile trail is the High Dunes. All previously closed areas-protected beaches, tern nesting areas, Great Island, Jeremy Point, and Hatches Harbor (salt marsh and tidal flats) - would remain closed and in the case of Hatches Harbor, closure was expanded.

The Outer Beach south of Head of the Meadow Beach is open to ORV's under this option, subject to consent and

Fig. 17. ORV routes proposed under Alternaive 1 of the Management Alternatives.



From Management Alternatives.

restrictions of the towns of Truro, Wellfleet, and Eastham which control most of the beach access points.

Alternative 2

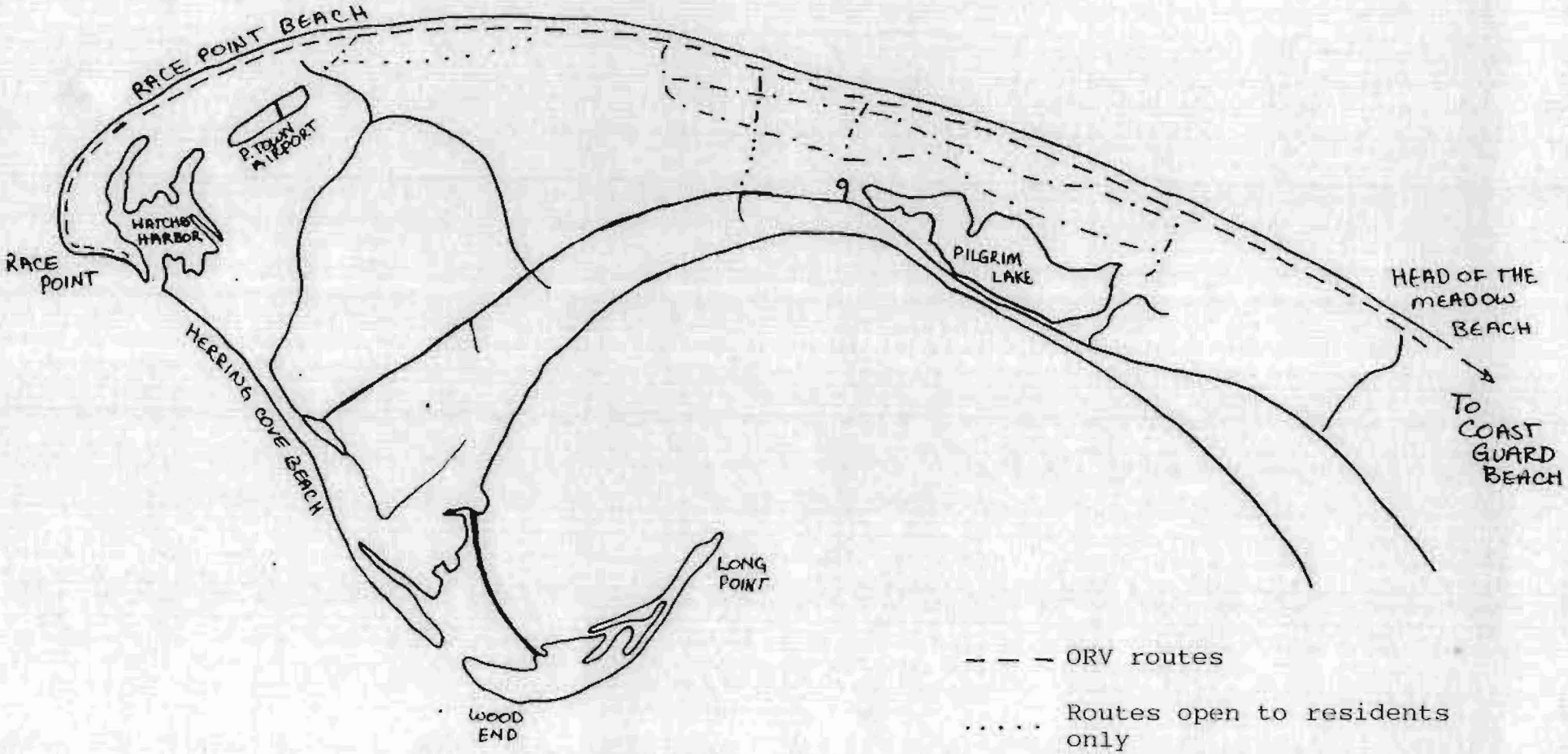
This option, shown in Figure 18, restricts some areas previously open to ORV's. A designated corridor on the Outer Beach from Race Point to Head of the Meadow Beach would be open to ORV's. South of Head of the Meadow Beach would be open subject to regulation by the Towns of Truro, Wellfleet, and Eastham governing access. As in Alternative 1, from Hatches Harbor to Long Point, Great Island and Jeremy Point, as well as, protected beaches and tern nesting areas, would be closed. In addition, the High Dunes would be closed to ORV traffic with two exceptions: owners and occupants of cottages located in the High Dunes would be permitted access to their property and commercial taxis would also be allowed to continue service over most of the existing designated trails in the High Dunes.

Alternative 3

Even more restrictive than the first two, this option would permit ORV use only on the Outer Beach from Race Point to Coast Guard Beach with the area south of Head of the Meadow subject to the permission of the towns of Truro, Wellfleet, and Eastham. This alternative is shown in Figure 19. The High Dunes would be completely closed to ORV travel except for owners and occupants of the dune cottages who would still be afforded access to their property.

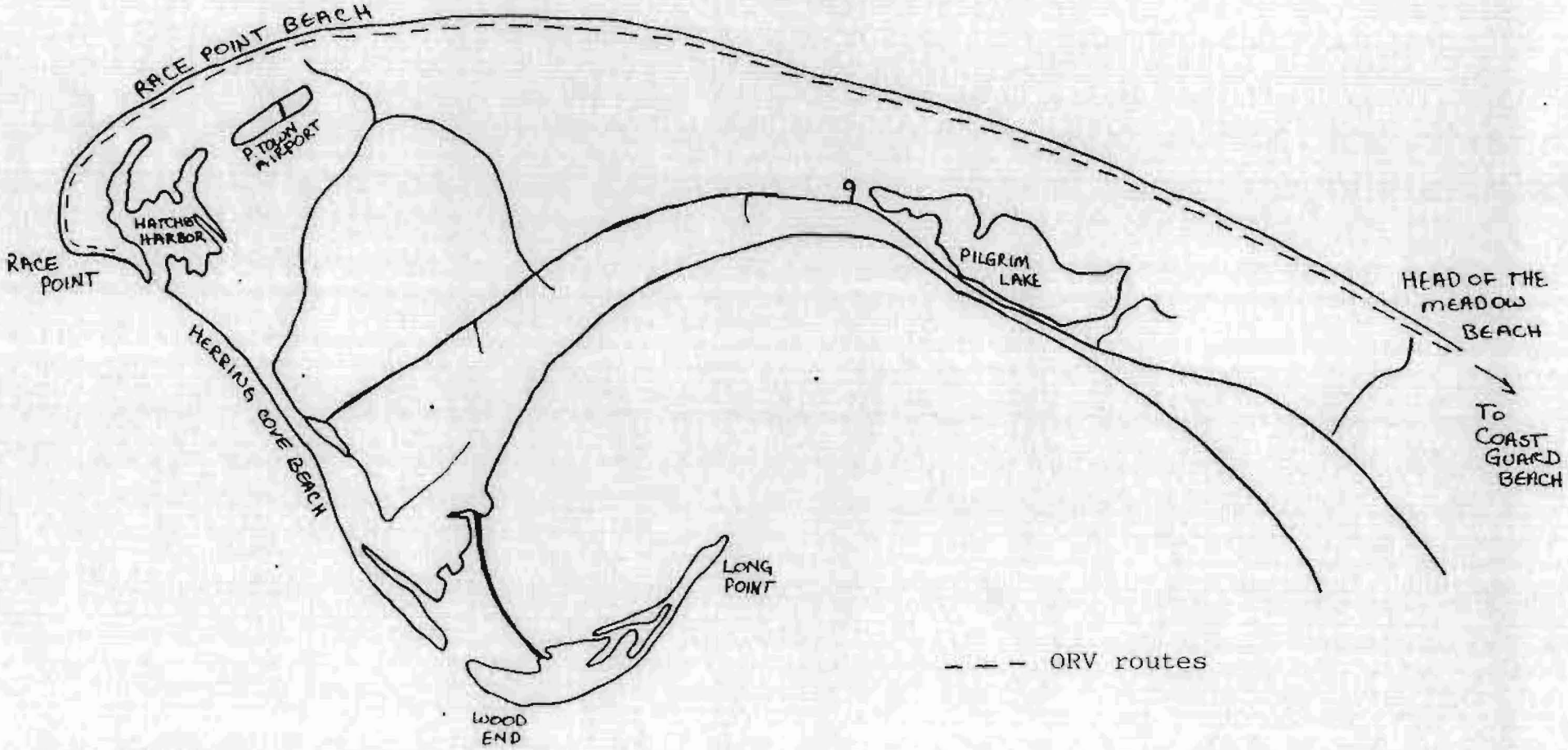
Alternative 4

Fig. 18. ORV routes proposed under Alternative 2 of the Management Alternatives.



From Management Alternatives.

Fig. 19. ORV routes proposed under Alternative 3 of the Management Alternatives.



From Management Alternatives.

This option would completely eliminate all ORV travel in the Cape Cod National Seashore north of Orleans, private and commercial. Only dune cottage owners and occupants would be permitted access to the area and then only for travel between their property and the nearest paved road.

The rules with which ORV operators must comply under any of these plans are found in Appendix 1.

Overnight Use of Self-Contained Vehicles on the Beach

Alternative 1 would completely eliminate overnight use of the beach by self-contained vehicles.

Alternative 2 would be more permissive reducing the number of vehicles allowed to remain on the beach overnight and the number of sites where overnight stay is permitted from what had been tolerated under the previous regulations. There were two options proposed.

Option 1 would provide only one site with a maximum of fifty vehicles for overnight use of the beach.

Option 2 would authorized the use of two sites with a maximum of seventy-five vehicles total for the two sites at any time.

Under Alternative 3, no change from the earlier policies would take place. All three of the self-contained vehicle colonies would remain open permitting a maximum of 100 vehicles per day and 125 vehicles on summer holidays.

The rules governing self-contained vehicles on the Seashore can be found in Appendix 1.

Limits for Number of Permits Issued

Under Alternative 1, as had previously been the practice, there would be no annual or daily limits set forth as to the number of ORV permits issued or permitted to enter the Seashore.

Alternative 2 gives two options for limiting the number of ORV's utilizing the beach.

Option 1 would establish an annual maximum of 4,068 permits issued for ORVs and 434 permits issued for self-contained vehicles. Once all of the permits for one year were issued, no more could be obtained until the next year. These maximum figures are based on the average number of permits issued for the 1977 to 1979 period. The thought was to balance the use of ORV's while minimizing impacts to the Seashore.

This option has the drawback that all of the permits may be issued early in the season causing congestion at that time. It would also seem unjust to penalize someone whose vacation is in the later part of the season. Another consideration with an annual limit for the number of permits issued is the surf fisherman whose season is extends well into the Fall. For the most part, these are not the "dune busters," but law abiding people pursuing a way of life. As one unidentified fisherman told me, "The fishermen are going to come anyway." They are generally willing to go through the permitting process but if permits are not available they will wind up using vehicles on the beach anyway. It would seem that this option would increase illegal use. This

seems a little pointless since late in the season there are likely to be fewer pedestrian activities in competition for the use of the Seashore than earlier when congestion and user conflict could be a real problem.

Option 2 would fix daily maximums for ORV permits issued to one hundred vehicles. This option stems from a recommendation by the National Seashore Advisory Commission. This would allow many more permit holders than daily capacity allowed for, but would provide the opportunity for more people to use ORVs on the Seashore during a year.

Although permit holders might feel disgruntled if they are excluded from use of the Seashore on a particular day because the daily maximum had been reached, at least it is only a day's inconvenience rather than a year's. Use of ORV's on the Seashore would be spread out over time and congestion would be held to a minimum by daily control which would be especially important during peak season. The quality of the trails and corridors could be more easily maintained under this option as well. The biggest drawback to this option is that it would be nearly impossible to administer and enforce given the present staffing situation.

Those alternatives which would mean no changes to the already existing policies were eliminated as insufficient. There was obviously a need for some action and "no action" would not resolve any problems nor would it meet the requirements of the applicable legislation. The Management Plan chosen was described in the section containing

background information. It was selected from the Management Alternatives by the National Park Service to be the most rational plan considering the laws, scientific information available, and Park Service resources.

Curtailing all or part of the off-road vehicle travel on the Seashore is likely to increase pedestrian use. This may eliminate much of the user conflict and aesthetic impacts caused by off-road vehicle use but will bring with it new problems and have a number of socio-economic and physical impacts which have already been considered in the previous section. These are the factors which the decision making agency must bear in mind when making decisions as to the utilization of public lands.

LEGAL CONSIDERATIONS

Established in 1961 as a National Park by the Cape Cod National Seashore Act, Public Law 87-126, the Seashore became public land. In this status, it falls under the custody and control of the Secretary of the Interior and his agencies. This Act, quoted earlier, states firmly that, any development or user services must be compatible with the existing flora and fauna and their preservation. The same paragraph also provides for the establishment of trails, services, and appropriate public uses to enhance public enjoyment.[94] Although there is room for interpretation of the phrase "appropriate public use," legislative history leaves little to question indicating that an "appropriate public use" is one which does not interfere with the primary purpose of the Seashore, that of its preservation.[95]

The National Park Service Act of 1974 can also be applied to the Seashore. It requires that all such areas of the National Park System be administered so that the scenery, wildlife, and the natural and historic aspects are preserved for future generations.[96] In 1978, the National Park Service Act was amended to ensure the decisions concerning the National Parks were made in accordance with the intended purposes.[97]

It has been the opinion of the courts that laws and rules should be interpreted with an eye to other laws on the same matter. Wyoming Outdoor Coordinating Council v. Butz, 359 F. Supp. 1178 (D.W.Y.O. 1973), is just one example of this concept in the context of public lands. In this case, the court ruled that in applying the National Environmental Policy Act to situations involving National Forests concurrent consideration of other related statutes is required.[98]

The National Environmental Policy Act, Cape Cod National Seashore Act, and Executive Orders 11644 and 119989 can all be readily interpreted with respect to one another with a clearly common thread. That is, the protection and preservation of the Seashore first and public enjoyment second. Each one appears consistent with the others.

So it seems that the same pieces of legislation which the National Park Service used as guidelines in setting up the Off-Road Vehicle Management Plan also cleary give the Conservation Law Foundation a strong basis for their case. The law specifically allows for off-road vehicles on public lands. There are also specific considerations for protection of the environment and minimizing user conflict in those laws. The decision by the National Park Service to designate certain areas and trails for off-road vehicle use was a conscious one based on the laws and scientific findings. The Conservation Law Foundation faults the Park Services' Mangaement Plan on the same grounds. In their

quest to save the Seashore from the damage of off-road vehicles, they filed suit in the United States District Court for the District of Massachusetts. It was their belief that in view of the scientific evidence and laws placing the Seashore under the protection of the Department of the Interior and its agencies for the public trust that the Management Plan was negligent and a violation of that trust.

Federal agencies are not exempt from conforming to legislation which governs their realm of administration. The legislation requires that the Park Service place its emphasis on preservation rather than on recreation in administering the Cape Cod National Seashore and other parks under its jurisdiction. There is some room for interpretation and flexibility by the agencies in exercising their duties but their actions are subject to judicial review. The courts will not look aside from agency decisions which are inconsistent with legislative mandates or contradict the intent of the legislation as interpreted by legislative history.

The Department of the Interior has been compelled by the decisions of federal courts to administer public lands in accordance with statutes governing such lands. Between 1974 and 1976, the federal district court for the Northern District of California handed down three decisions on Sierra Club v. Department of the Interior, 376 F. Supp. 90 (N. D. Cal. 1974) - Redwoods I; 398 F. Supp. 284 (N. D. Cal. 1975)

- Redwood II; 424 F. Supp 172 (N. D. Cal. 1976) - Redwoods III. The three cases involved the havesting of timber by clearcutting upslope and outside of the Redwood National Park. These logging operations caused damage to the timber, soil, and streams within the park. In these cases, the Department of the Interior was found negligent in performing its duties stipulated by the National Park System Act and the Redwood National Park Act to protect the resources of that Park. The Court required that the Department of the Interior take action to protect the Park from activities even outside its boundaries. Such measures to include acquisition of adjacent lands, contracts of cooperative agreements, and requests for funds from Congress as necessary.[99]

It might be useful to compare a couple of aspects of the Redwood cases to the Cape Cod ORV case. First, the level of Congressionally - mandated protection for the two National Parks differs. There are three degrees of protection as designated by their purposes and by the directives to the Secretary and the appropriate agencies for their administration. The low level is shared by 87 areas, each in its establishing act refers to preservation for public use and enjoyment. At this level, the Secretary is not bound to employ his authority for the purpose of conservation but may if it seems appropriate.[100]

The establishing legislation for the eleven areas covered by a medium level of protection all contain a

passage specifying the preservation of aesthetics and natural and historical value now and for the future. They also cite enhancement of public recreational use and ecological values. These areas have very specific objectives which direct the Secretary in administering them. This is the group to which Redwood National Park belongs.[101]

Cape Cod National Seashore is one of only six areas designated as having the highest level of protection provided to public lands by Congress. The establishing legislation of these areas exhibit extremely restrictive language.[102] This can be seen in the Seashore Act where the words, "shall be permanently preserved," lend their emphasis to the primary objectives of the Act. This obliges the administrators to center their concerns on protection.

The other comparison to be made is that the Redwood cases dealt with damage resulting from activities outside the Park while the case in question deals with actions within the Seashore and directly under Park Service jurisdiction.[103]

Surely with these two items in mind, it does not seem unreasonable that the Conservation Law Foundation should expect the Court to give fair consideration to their case. If the responsibilities to preserve the Redwood National Park have been brought to bear on the Department of the Interior it is logical to expect that they would also be binding with regard to the Cape Cod National Seashore with at least as great force.

An Executive Order is a statement of Presidential policy to guide federal agencies in the execution of their duties. The language in Executive Orders 11644 and 11989 is very specific regarding the protection of public lands from the use of off-road vehicles.

The Conservation Law Foundation cites cases in which the courts have reviewed agency actions relating to Executive Orders. In National Wildlife Federation v. Morton, 393 F. Supp. 1286 (D.D.C. 1975), the Bureau of Land Management was found by the court to have violated Executive Order 11644 by neglecting to have land under its authority properly evaluated and failing to designate specific areas for ORV use.[104]

In Legal Aid Society of Alemeda County v. Brennan, 608F.2d 1319 (9th Cir. 1979), the court found that regulations set up in response to an executive order are mandatory and subject to judicial enforcement unless such action is specifically unallowed by the order itself.[105] That is, judicial review is appropriate in requiring government agencies to fulfill their non-discretionary responsibilities.

In order to be entitled to a preliminary injunction under the Federal Rules of Civil Procedure, the plaintiffs must demonstrate a strong case for at least some of the following standards: (1) that it is reasonably likely that the plaintiffs' could prevail on the merits of the case, (2) that an injunction, if granted, would be in the public

interest, (3) that irreparable damage would occur if an injunction were not granted, and (4) that granting an injunction would serve to balance the interests of plaintiffs and defendents.[106]

In filing for preliminary injunction, the Conservation Law Foundation felt that they met these criteria. Claiming that the Park Service is in violation of the laws requiring preservation of the Seashore and brandishing the findings of the Leatherman-Godfrey Study, the Conservation Law Foundation felt sure of success prevailing on the merits of the case. On the surface, this appears fairly clear, however, a more thorough look may undermine even this aspect.

Since the Seashore is a National Park, public lands, maintained by the Federal Government for the enjoyment of all, a preliminary injunction would surely be in the public interest. I think this test is certainly met.

If indeed off-road vehicles cause irreparable harm then by not granting a preliminary injunction, the court will be jeopardizing the possibility of a future alternate decision of any consequence.[107] But how substantial is that supposition? We have seen from the Leatherman-Godfrey Studies that off-road vehicles cause severe damage to all seashore ecosystems. On the other hand, their reports showed that most species do recover in time. Their accounts also say that heavy use of one track is likely to localize damage. This is not indicative of being entirely

irreparable.

A preliminary injunction appears equitable in this case since it will not actually harm the Department of the Interior or the National Park Service, nor does it directly benefit the Conservation Law Foundation. It will cause the Massachusetts Beach Buggy Association, an intervenor-defendent, to lose the right to use the Seashore for their chosen recreation but will benefit the 97 percent of Seashore visitors who chose pedestrian recreation.[108]

The National Park Service considered the relevant legislation and available scientific information, the lands within the Seashore were evaluated, the availability of the Management Alternatives was announced in the Federal Register, public opinion was sought. These are the procedures required by law. Secondly, the Leatherman-Godfrey study does contain recommendations for controlled use of off-road vehicles and recommends their banishment from specific parts of the Seashore. This does not wholly support the Conservation Law Foundations case.

The court has a great deal to consider. We must remember that the question before the judge is not whether the Management Plan is right but whether it is legally sufficient. It is not their place to second guess the decision makers. Their duty is to carefully review the facts in order to determine whether the decisions of the defendents were arrived at in a legal manner. The Administrative Procedure Act governs which agency actions

will be reviewed by the court and in what manner. It states:

> "A person suffering legal wrong because of agency action, or adversely affected or aggrieved by agency action...is entitled to judicial review."[109]

Also,

> "The reviewing court shall 1) compel agency action unlawfully withheld or unreasonably delayed; and 2) hold unlawful and set aside agency action, findngs, and conclusions found to be - A) arbitrary, capricorns, an abuse of discretion, or otherwise not in accordance with law...."[110]

The Act directs that in reaching its decision, the court must review the record to determine whether an agency has violated the law or made an error in judgement.[111]

Several cases lend guidance in this type of decision. In a case similar to the one under consideration here, Sierra Club v. Andrus, 487 F. Supp. 443 (D.D.C. 1980), the court held that,

> "The standard of review is a highly differential standard which presumes agency action to be valid, forbids a court's substituting its judgement for that of the agency and requires affirmance if a rational basis exists for the agency's decision."[112]

The court refused to issue an injunction in July of 1981. The defendents objected to discovery in November of

1981 on the grounds that the decision should be made on the basis of the information available at the time the National Park Service inaugurated the Management Plan. They were overruled in January of 1982. Discovery was closed on May 18, 1982. More motions were filed, a status conference was held in May of 1982 and another in February of 1983. At the second conference, the court announced its decision to review the administrative record in reaching a conclusion. Judy Nelson visited the Seashore on June 10, 1983 to view the problem first hand. Surveys to determine the effectiveness of the Management Plan to protect the Seashore were also conducted by Paul J. Godfrey, who is still employed by the National Park Service and Stephen Leatherman, acting for the Conservation Law Foundation. These reviews resulted in conflicting reports by the two scientists.

Each spring, the Conservation Law Foundation has hoped that the Judge would reach a decision in their favor to prevent another season of damage to the Seashore.

CONCLUSION

Finally on May 25, 1984, a decision was rendered.[113] This will, by no means be the end however. Three issues were treated separately. These were centered on the ecological damage, aesthetic damage, and user conflict.

As seemed apparent, the National Park Service did follow procedural law in establishing the Management Plan. The Judge also allowed that their decision is strictly based on ecological damage was not unfounded. The Plan follows many of the recommendations of the Leatherman-Godfrey studies taking into account the concept of "no carrying capacity" and recovery rates of the various ecosystems. Much as I don't like the decision permitting off-road vehicle use to continue on the Seashore, I do think it was arrived at in a reasonable manner and represents a just course of action. It does not matter that we don't like the Plan, it was arrived at legally and within the bounds of reason and judgement and that is what counts.

So, the use of off-road vehicles continues for another season. There will be no injunction. This is not a surprising outcome. It is easier for a judge to permit agency actions to continue than to justify a decision against them. But the Department of the Interior or the

National Park Service is not off the hook yet. It appears that their decision was based solely on ecological considerations. Based on the other issues, the judge has remanded the decision regarding the Management Plan back to the National Park Service. They are to review the Plan as to its affects on aesthetics and user conflict and have been given approximately two months to do so.

During the review period, the Park Service is required to consider public opinion. This could be the last chance for pedestrian recreationists to voice themselves before the case is closed. They are not nearly as vocal or organized as the Massachusetts Beach Buggy Association and other such organizations but they compose 97 percent of those who visit the Seashore. I hope they can make themselves and their aversion for off-road vehicles heard. If it can be shown that the majority of Seashore goers prefer the quiet pedestrian activities without off-road vehicle interference, perhaps the Park Service will be forced to further restrict their use.

Aesthetics is to a great degree a matter of opinion. But, not even the users of off-road vehicles find pleasure in the ruts and blowouts left by their vehicles. They have been known to leave authorized trails in order to avoid such rough topography. Aesthetics damage and its importance is hard to pin down. This case is highly unusual in that part of the decision is based on such a tenuous premise.

One of the options left to the Park Service in order to

at least appear to be attempting to comply with the courts desires would be to set limits for permits issued. This alternative was examined when the Management Plan was formulated. The decision not to set limits was in part due to the determination that such limits would be largely unenforceably given the Park Service's financial and manpower constraints. They could appeal to Congress for funds to institute such a program but money is hard to come by even within government agencies.

What if the Park Service chose not to alter the Management Plan based on their review? The Judge has provided an opportunity for the Conservation Law Foundation. He has set an unusual precedent prevailing on issues of aesthetics and user conflicts. But, I do not think that in the end, off-road vehicles will be forced to relocate. I hope I am mistaken but it already appears that the actual decision has been made regardless of the outcome of the second two issues.

ENDNOTES

[1] Orrin H. Pilkey and Mark Evans, "Rising Sea, Shifting Shores," in Coast Alert Scientists Speak Out, eds. Thomas C. Jackson and Dianna Reische (San Francisco: Friends of the Earth. 1981), p.18.

[2] Stephen P. Leatherman, et. al., Management Strategies for National Seashores, from Proc. of Symposium on Technical, Environmental, Socio-Economic and Regulatory Aspects of Coastal Zone Planning and Management, 14-16 March 1978, San Francisco, CA., p. 324.

[3] Robert Dolan, "Barrier Dune Systems Along the Outer Banks of North Carolina: A Reappraisal," Science, 176, p. 287.

[4] Leatherman, Management Strategies, p.334.

[5] Ibid, p.331.

[6] Department of the Interior, National Park Service, Record of Decision, Finding of No Significant Impact, Off-Road Vehicle Management Plan, Cape Cod National Seashore, Massachusetts, February 27, 1981, p1 (Management Plan).

[7] Management Plan, p.1.

[8] National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4321, Pub. L. No. 90-190, § 2, 83 stat. 852

(1976).

[9] NEPA, 42 U.S.C. § 4331.

[10] NEPA, 42 U.S.C. § 4331.

[11] Cape Cod National Seashore Act, 16 U.S.C.§§ 4596 to 4596-8,
Pub. L. No. 87-126, 75 stat. 284 (August 7, 1961).

[12] Department of the Interior, National Park Service, Analysis of Management Alternatives For Off-Road Vehicle Use, Cape Cod National Seashore, Massachusetts, October 1980, p.6 (Management Alternatives).

[13] Executive Order 11644,

[14] Executive Order 11644,

[15] Executive Order 11989,

[16] Defendents' Memorandum in Support of their Motion to Affirm the Secretary's Decision, Conservation Law Foundation v. James J. Watt, No. 81-1004-N (D. Mass., filed June 22, 1983), p.9.

[17] Management Alternatives, p.11.

[18] Management Plan, p.2.

[19] Guidelines of the Management Plan are from Management Plan, pp.2 and 3.

[20] Paul J. Godfrey and Melinda M. Godfrey, "Ecological Effects of Off-Road Vehicles on Cape Cod," in Oceanus, 23 No. 4, Winter 1980-81, p.59.

[21] Stephen P. Leatherman and Paul J. Godfrey, The Impacts of Off-Road Vehicles on Coastal Ecosystems in Cape Cod National Seashore: An Overview, UM-NPSCRU Report No.

34, 1979, p.3.

[22] Leatherman and Godfrey, p.3.

[23] Godfrey and Godfrey, p.59.

[24] Leatherman and Godfrey, p.4.

[25] Bradford G. Blodget, The Effects of Off-Road Vehicles on Least Terns and Other Shorebirds, UM-NPSCRU Report No. 26, 1978, p.23.

[26] Godfrey and Godfrey, p.60.

[27] J.R. Burroughs. A study of the breeding biology of Least Terns on Nantucket Island, Unpublished M.S. Thesis, University of Massachusetts, Amherst, 1966, in Blodget, p.35.

[28] Blodget, p.36.

[29] Blodget, p.31.

[30] Blodget, p.40.

[31] Blodget, p.35.

[32] Blodget, p.37.

[33] Blodget, p.61.

[34] Blodget, p.50.

[35] Blodget, p.62.

[36] Blodget, p.10.

[37] John M.B. Brodhead and Paul J. Godfrey, The Effects of Off-Road Vehicles on Coastal Dune Vegetation in the Province Lands, US-NPSCRU Report No. 32, 1979, p.viii.

[38] Brodhead & Godfrey, Dune Vegetation, p.43.

[39] Brodhead & Godfrey, Dune Vegetation, p.vii.

[40] Leatherman & Godfrey, p.7.

[41] Leatherman & Godfrey, p.7.

[42] Godfrey & Godfrey, p.61.

[43] Leatherman & Godfrey, p.9.

[44] Brodhead & Godfrey, Dune Vegetation, p.49.

[45] Brodhead & Godfrey, Dune Vegetation, p.28.

[46] Leatherman & Godfrey, p.9.

[47] Haynes R. Mahoney, "Dune Busting How Much Can Our Beaches bear," Sea Frontiers, 26, No. 26. Nov/Dec 1980, p.327.

[48] Godfrey & Godfrey, p.62.

[49] Brodhead & Godfrey, Dune Vegetation, p.52.

[50] Leatherman & Godfrey, p.7.

[51] Brodhead & Godfrey, Dune Vegetation, p.57.

[52] Godfrey & Godfrey, p.63.

[53] Brodhead & Godfrey, Dune Vegetation, p.61.

[54] Brodhead & Godfrey, Dune Vegetation, p.58.

[55] Leatherman & Godfrey, p.13.

[56] Brodhead & Godfrey, Dune Vegetation, p.60.

[57] Brodhead & Godfrey, Dune Vegetation, p.62.

[58] Brodhead & Godfrey, Dune Vegetation, p.62.

[59] Leatherman & Godfrey, p.15.

[60] John M. Brodhead & Paul J. Godfrey, Effects of Off-Road Vehicles on Plants of a Northern Marsh, UM-NPSCRU Report No. 33, 1979, p.4.

[61] Brodhead & Godfrey, Northern Marsh, p.10.

[62] Leatherman & Godfrey, p.15.

[63] Brodhead & Godfrey, Northern Marsh, p.10.

[64] Brodhead & Godfrey, Northern Marsh, p.11.

[65] Leatherman & Godfrey, p.19.

[66] Leatherman & Godfrey, p.19.

[67] Godfrey & Godfrey, p.65.

[68] Brodhead & Godfrey, Northern Marsh, p.4.

[69] Brodhead & Godfrey, Northern Marsh, p.13.

[70] Godfrey & Godfrey, p.65.

[71] Godfrey & Godfrey, p.65.

[72] Leatherman & Godfrey, p.15.

[73] Brodhead & Godfrey, Northern Marsh, p.15.

[74] Leatherman & Godfrey, p.xi.

[75] Recommendations are taken from Leatherman & Godfrey, pp.xi to xiv.

[76] Brodhead & Godfrey, Northern Marsh, p.2.

[77] Management Plan, p.1.

[78] Management Alternatives, p.26.

[9] Management Alternatives, p.26.

[80] Memorandum filed June 22, 1983, p.41.

[81] Robert J. Badaracco, "ORV's: Often Rough on Visitors," Parks and Recreation, September 1976, p.68.

[82] Badaracco, p.69.

[83] Badaracco, p.71.

[84] Badaracco, p.68.

[85] Memorandum in Reply to Defendent's opposition to Plantiffs' Motion for Preliminary Injunctive Relief, Conservation Law Foundation v. James G. Watt, No. 81-1004-N (D. Mass filed July 6, 1983), p.25.

[86] Memorandum filed July 6, 1983, p.25.

[87] Affidavit of Herbert Olsen, Superintendent, Cape Cod National Seashore, Conservation Law Foundation v. James G. Watt, No. 81-1004-N (D. Mass, filed July 24, 1981), p.5.

[88] Olsen, p.6.

[89] Olsen, p.6.

[90] Olsen, p.4.

[91] Olsen, pp.3 & 4.

[92] Olsen, p.5.

[93] Management Alternatives, pp.12-18.

[94] Seashore Act § 459b

[95] Memorandum in Support of Plaintiffs' Motion for Preliminary Injuction, Conservation Law Foundation v. James J. Watt, No. 81-1004-N (D. Mass-filed July 2, 1981, p.25. 96.

[96] National Park Service Act of 1974, 16 U.S.C. § 1 (1974).

[97] Memorandum filed July 2, 1981, p.27.

[98] Memorandum filed July 2, 1981, p.48.

[99] Memorandum filed July 2, 1981, p.32.

[100] Memorandum filed July 2, 1981, p.34.

[101] Memorandum filed July 2, 1981, p.34.

[102] Memorandum filed July 2, 1981, p.35.

[103] Memorandum filed July 2, 1981, p.35.

[104] Memorandum filed July 2, 1981, p.45.

[105] Memorandum filed July 2, 1981, p.46.

[106] Memorandum in Support of Plaintiffs' Motion for

Preliminary Injunction, Conservation Law Foundation v. James J. Watt, No. 81-1004-N (D. Mass., filed June 6, 1983), p.33.

[107] Memorandum filed June 6, 1983, p.34.

[108] Memorandum filed June 6, 1983, p.37.

[109] Administrative Procedure Act, 5 U.S.C. § 706 (1976), Pub. L. No. 89-554, 80 stat. 393 Sept. 6, 1966 (APA).

[110] APA § 706.

[111] APA § 706.

[112] Memorandum filed June 22, 1983, p.20.

[113] Facts regarding the May 25, 1984 decision were obtained by phone conversation with Emily Bateson of the Conservation Law Foundation on June 21, 1984.

SELECTED BIBLIOGRAPHY

Badasacco, Robert J. "ORV's: Often Rough on Visitors." Parks and Recreation. Sept. 1974.

Barish, Mark. National Park Service. Personal interviews.

Bateson, Emily. Conservation Law Foundation. personal interviews.

Blodget, Bradford G. The Effects of Off-Road Vehicles on Least Terns and Other Shorebirds, UM-NPSCRU Report No. 26 1978.

Brodhead, John M.B. and Paul J. Godfrey. The Effects of Off-Road Vehicles on Coastal Dune Vegetation in the Province Lands, Cape Cod National Seashore, Massachusetts. UM-NPSCRU Report No. 32, 1979.

----------. Effects of Off-Road Vehicles on Plants of a Northern Marsh. UM-NPSCRU Report No. 33, 1979.

Conservation Law Foundation v. James J. Watt. No. 81-1004-N. D. Mass. Memoranda filed by Plaintiffs and Defendents.

Department of the Interior, National Park Service. Analysis of Management Alternatives For Off-Road Vehicle Use, Cape Cod National Seashore, Massachusetts. October 1980.

----------. Record of Decision, Finding of No Significant Impact, Off-Road Vehicle Management Plan, Cape Cod National Seashore, Massachusetts. February 21, 1981.

Dolan, Robert, "Barrier Dune Systems Along the Outer Banks of North Carolina: A Reappraisal." Science, 176 (1972). pp.286-288.

Godfrey, Paul J. and Melinda M. Godfrey. "Ecological Effects of Off-Road Vehicles on Cape Cod." Oceanus, 23, No. 4 (1980), pp.56-67.

Leatherman, Stephen P. and Paul J. Godfrey. The Impact of Off-Road Vehicles on Coastal Ecosystems in Cape Cod National Seashore: An Overview. UM-NPSCRU Report No. 34, 1979.

Leatherman, Stephen P., Paul J. Godfrey, and P.A. Buckley. Management Strategies for National Seashores. Proc. of Symposium on Technical, Environmental, Socio-Economic

and Regulatory Aspects of Coastal Zone Planning and Management. 14-16 March 1978. San Francisco, CA.

Mahoney, Haynes R. "Dune Busting How Much Can Our Beaches Bear." Sea Frontiers, 26 No. 26 (1980).

Pilkey, Orrin H. and Mark Evans. "Rising Sea, Shifting Shores." in Coast Alert Scientists Speak Out, eds. Thomas C. Jackson and Dianna Reische. San Francisco: Friends of the Earth, 1981. pp. 13-48.

5 U.S.C. §§ 500 et seq. (1976). Administrative Procedure Act.

16 U.S.C. §§ 459b et seq. (1976). Cape Cod National Seashore Act.

42 U.S.C. §§ 4321 et seq. (1976). National Environmental Policy Act.

Appendix 1

CAPE COD NATIONAL SEASHORE

1983

OVERSAND VEHICLE REGULATIONS

All vehicles operating oversand within the Seashore shall have affixed on the bumper a valid annual permit. All oversand vehicle permits must be purchased at Race Point Ranger Station in Provincetown. (617-487-2100)

1. Permits may be purchased during the following hours:

Daily hours:	May - September	October - April **
	9:00AM to Noon 12:30 PM to 4:45 PM	10:00 AM to Noon 1:00 PM to 3:00 PM

**During this period, it is suggested that you phone the Race Point Ranger Station for an appointment.

A Permit is required year-round for all vehicles. Permits are not transferable and expire on December 31. A copy of regulations shall be carried in all vehicles operating oversand. Violators of rules, regulations or policies will incur penalties including mandatory court appearance, fines and loss of permit privilege for at least one year. In case of lost or stolen permits, contact a North District Ranger before returning to oversand use.

2. All vehicles operating oversand shall be equipped with the following: shovel, jack, tow device, jack support board, low pressure tire gauge, approved tires and spare tire. This equipment shall meet standards as listed below.

3. Sleeping may occur only in self-contained vehicles in compliance with established rules, regulations and policies. Sleeping in the open or in regular vehicles is prohibited. Tents and camping trailers are prohibited.

4. Sand routes are closed to travel between 10:00 PM and 6:00 AM, except to fishermen.

5. Driving off the designated marked oversand route and/or over vegetation is prohibited. Violators will face a mandatory court appearance and loss of annual permit for one or more years.

6. On the beach, travel is prohibited on the foreshore and foredune areas (see beach terminology diagram).

7. Unless otherwise posted, the speed limit is 15 MPH. Posted 5MPH speed limits shall be obeyed.

8. Vehicles may be parked only on the legal oversand vehicle corridor and only if traffic is not obstructed. Vehicles may not be parked on emergency routes.

9. When two vehicles meet on the beach, the operator of the vehicle with the water on his right has the right of way; the operator with the water on his left shall yield. When two vehicles meet on the emergency route, the operator of the vehicle in the best position to yield shall pull out of the track and this operator shall back into the established track before resuming his original direction.

10. Riding on fenders, tailgates, roof or on any other position outside of the vehicle is prohibited.

11. Vehicles shall not be driven across protected swimming beaches at any time these areas are posted with appropriate signs.

12. Tire pressure shall not exceed 15 PSI. Ruts or holes caused by stuck vehicles shall be filled in and debris removed.

13. Annual permits may not be issued to vehicles with caps or shells that extend more that 12" above the cab.

14. Limitations may be imposed upon the numbers of regular and self-contained vehicles permitted to use the oversand routes and beaches.

Equipment Standards

1. Shovel must be of heavy duty type equal to or better than the military folding shovel.

2. Tow device must be not less than 14 feet in length. Minimum material diameters are as follows: chain 5/16", cable ¼", hemp 1", nylon 3/4" or polypropylene 3/4". Chain and cable must be equipped with suitable attaching devices on both ends.

3. Jack support must have an area not less than 144 square inches and a length not greater than 18". Thickness must be not less that 5/8" if plywood and 1½" if solid wood. Other materials must be at least as strong and durable as the standard wood support.

4. Jack may be of the standard size and type provided by the manufacturer.

5. Tire gauge must be able to register to a minimum of 5 PSI.

6. Spare tire must be of sufficient size to enable the vehicle to be operated oversand.

7. Minimum tire standards are as follows:

(a) Highway tread tires H70, H75, H78, HR70, HR75, HR78, 225/70, 225/75, 225/70R, 225/75R, LR60, and 8.75-16.5.

(b) All season design tread tires L70, L75, L78, 235/70, 235/75, 235/70R, 235/75R, and 27/8.50-14.

(c) Mud and snow (M/S) and off road tread tires 10.00 and 255.

(d) On four wheel drive vehicles with 13" wheels as original equipment radial highway tread tires BR70, BR75, BR78, 185/70R, 185/75R.

(e) Self-contained vehicles 3/4 - 1 ton, highway tread tires L70, L75, L78, LR70, LR75, LR78, conventional truck tire size 7.50-16, 7.50-17, and highway tread wide base tire size 8.75-16.5.

(f) Two wheel drive vehicle types that have proven oversand capability may be acceptable. Two wheel drive vehicles must be equipped with tires of sufficient size and configuration to propel the vehicle over the beaches and sand routes without excessive wheel spin or becoming inoperable when such vehicle is operated at speeds not to exceed 15 MPH except that no drive tires will be less that "H" series.

Violations of the aforementioned regulations will result in the issuance of a violation notice and may result in a mandatory court appearance and/or loss of permit for one year.

CAPE COD NATIONAL SEASHORE

1983

SELF-CONTAINED VEHICLE REGULATIONS

All vehicles operating oversand within the Seashore shall have affixed on the bumper a valid annual self-contained permit. All oversand vehicle permits must be purchased at Race Point Ranger Station in Provincetown. (617 487-2100)

1. Permits may be purchased during the following hours:

Daily hours:	May - September	October - April**
	9:00 AM to Noon	10:00 AM to Noon
	12:30 PM to 4:45 PM	1:00 PM to 3:00 PM

** During this period, it is suggested you phone the Race Point Ranger Station for an appointment.

A permit is required year-round for all vehicles. Permits are not transferable and expire on December 31. A copy of regulations shall be carried in all vehicles operating oversand. Violators of rules, regulations or policies will incur penalties including mandatory court appearance, fines and loss of permit privilege for at least one year. In case of lost or stolen permits, contact a North District Ranger before returning to oversand use.

2. Sleeping may occur only in self-contained vehicles in compliance with established rules, regulations and policies. Sleeping in the open or in regular vehicles is prohibited. Tents and camping trailers are prohibited. Self-contained vehicles may be parked for a period not to exceed 72 consecutive hours at designated locations. At the end of such period the operators of such vehicles must drive them off the beach for the purpose of emptying holding tanks at designated dumping sites. Self-contained vehicles may operate only between Race Point access points and the furthest boundary of the designated self-contained areas. Self-contained vehicles, other vehicles and trailers must be parked in the designated areas so as to not interfere with other beach traffic. No vehicles, trailers or equipment may be parked, driven or stored above the spring high tide line and/or on any vegetation.

3. A maximum of 100 self-contained vehicles are allowed on the beach at one time. Reservation requests for July 4th and Labor Day weekends are required and will only be accepted by mail beginning January 1st of each year. Extreme weather conditions may require the beach to be closed and all vehicles removed.

4. During the period from July 1 through Labor Day the following additional requirements will apply.

(a) Self-contained vehicle operators must obtain and display a valid self-contained vehicle disposal pass. To become eligible for a disposal pass, a self-contained vehicle must have affixed a valid annual self-contained permit. Disposal passes may be issued to eligible self-contained vehicles for a period not to exceed 3 consecutive days. A day is counted as beginning when a disposal pass is issued and ending at 5:00 PM on the following day. If a vehicle is on the beach for only a portion of a day, it will still count as a full day of use.

(b) Disposal passes expire on the date which appears on the pass. Disposal passes may be renewed during established business hours on this date or the vehicle must be removed from the beach by 5:00 PM. Disposal passes must be posted on the vehicle so that patrol rangers driving through the self-contained areas may read the pass expiration date.

(c) A disposal pass may be issued for a self-contained vehicle only when this vehicle is present at the point of issuance. NOTE: Vehicles with valid self-contained vehicle permits arriving after established business hours may obtain a disposal pass the following morning at 9:00 AM and the vehicle need not be present for this first issuance.

(d) A self-contained vehicle is limited to a total of 21 days parking regardless of who is operating or using it.

(e) Disposal passes are not transferable.

Equipment Standards

1. Shovel must be of heavy duty type equal to or better than the military folding shovel.

2. Tow device must be not less that 14 feet in length. Minimum material diameters are as follows: chain 5/16", cable ¼", hemp 1", nylon 3/4", or polypropylene 3/4". Chain and cable must be equipped with suitable attaching devices on both ends.

3. Jack support must have an area not less that 144 square inches and a length not greater than 18". Thickness must be not less than 5/8" if plywood and 1¼" if solid wood. Other materials must be at least as strong and durable as the standard wood support.

4. Jack may be of the standard size and type provided by the manufacturer.

5. Tire gauge must be able to register to a minimum of 5 PSI.

6. Spare tire must be of sufficient size to enable the vehicle to be operated oversand.

7. A fire extinguisher.

8. Permanently mounted holding tanks with a minimum capacity of 3 days waste material.

9. Minimum tire standards are as follows:

(a) Self-contained vehicles 3/4 - 1 ton, highway tread tires L70, L75, L78, LR70, LR75, LR 78, conventional truck tire size 7.50-16, 7.50-17 and highway tread wide base tire size 8.75-16.5.

(b) Two wheel drive vehicle types that have proven oversand capability may be acceptable. Two wheel drive vehicles must be equipped with tires of sufficient size and configuration to propel the vehicle over the beaches and sand routes without excessive wheel spin or becoming inoperable when such vehicle is operated at speeds not to exceed 15 MPH except that no drive tires will be less than "H" series.

Violations of the aforementioned regulations will result in the issuance of a violation notice and may result in a mandatory court appearance and/or loss of permit for one year.